
Study Title:
**Comparison of Methyl Bromide Gas Concentrations in the
Tarp Soil Inter-space: Deep Broadcast Tarped vs. Shallow
Broadcast Tarped Fumigation**

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^sNote: Tab divider numbers are the same as the Appendix numbers.

BACKGROUND AND PURPOSE

Emission ratios established by the DPR directly influence buffer zone distances since increased emissions result in higher offsite concentrations, all else being equal. The distances have a direct impact on the agricultural industry that utilizes soil fumigation to control pests. The greater the distance, the greater the impact. Therefore, it is imperative that the distance be accurate not just to protect human health, but, also not unreasonably restrict farming practices. The current emission ratio for deep tarped fumigation is 0.40, the same as deep non-tarp. Shallow broadcast tarped is 0.25. It is inferred from existing scientific data that increased application depth is a significant factor in reducing emission rates (Gan et al., 1997, Yate et al., 1997). It would seem logical that emission rates from deep tarped fumigation should be less than a shallow tarped fumigation if depth is a significant factor compared with other elements of the application method that influence emissions. DPR expressed concern that the application methods are different enough, due to the shanks and injection method, that there could still be greater peak emission rates from the deep tarped application method.

Emissions and offsite air concentrations are directly proportional to methyl bromide gas concentrations directly below the tarp surface. With the emission ratio being well established for broadcast shallow applications, an estimate of relative emissions from the tarped broadcast deep method can be obtained by comparing the relative methyl bromide gas concentrations under the tarp over time for both the methods. This study thus bridges the relationship of emissions between the two application methods by making that comparison. This approach was discussed at a meeting with the DPR staff on April 21 and confirmed in a DPR letter dated 4/28/03.

This study also tests the hypothesis that increased application depth in deep tarped fumigations will result in lower peak under-tarp concentrations and subsequently reduced peak emissions compared with tarped shallow applications and is more significant than the injection method used.

OBJECTIVES

1. Monitor concentrations of methyl bromide soil gas under-tarp within the tarp-soil inter-space at selected sampling intervals in order to determine differences between the application methods over the course of the fumigation.
2. Perform a comparative analysis of soil gas concentrations and CT between the various treatments.
3. Record/characterize soil and tarp-soil inter-space temperatures during the study.
4. Collect pre-treatment soil samples to characterize the test system soil.

EQUIPMENT & MATERIALS

Primary equipment and materials used in to conduct this study are listed below:

1. Prepared Field plot: (see Study Field maps and General Information in Appendix 1).
2. Application Equipment for methyl bromide: Caterpillar D4E with broadcast fumigation application (TRICAL).
3. Methyl Bromide fumigant: Methyl Bromide 98%, EPA Reg. No. 8536-19-11220; application rates for treatments recorded in Table 1 in Appendix 2.
4. Selected tarp film for study treatments: 13 foot wide rolls:
 - Cadillac Products, Inc. - 1.0 mil Clear High Barrier Fumigation Film (High Density Polyethylene Film) CPI# 0048061
5. Access ramps – tarp strips
6. Gas sampling probes, septums and clamps.
7. Gas tight syringes and transport containers: syringes, B-D 2066, 20 ml; coating solution; Ice chest with syringe racks.
8. Analytical equipment: Gas chromatograph
 - Syringe gas analysis: Buck Scientific Model 901 G.C. equipped with an FID detector and gas sampling loop / valve system. Data integrated and logged with Peak Simple software.
9. Hobo Data Loggers with soil temperature probes for collecting soil temperatures.
10. Soil Core Sampler: AMS 404-63, 1.5 inch I.D. X 6 inch length retaining cylinder.

METHODS

Study Field Replication

This study was replicated at two separate field locations, TC440.1 and TC440.2.

Ground Preparation

For both locations, trees and vines had been the previous crops. These were removed the previous season. When the ground was dry in the summer, it was ripped to a depth of 4.5 feet. The ground was then disked both ways and culti-packed/ring-rolled. The fields were then laser leveled. Prior to the fumigations, approximately a half-inch of water was applied to the surface of the soil and disked in.

Soil preparation for both methods and in both fields was kept the same to isolate the variable of application method alone. This resulted in the soil in the shallow application to be worked deeper than usual, which would promote downward movement of gas and conversely lower concentrations in the tarp-soil inter-space. The presence of plow pans and greater moisture at lower depths in a field prepared for a typical commercial shallow tarped application would generally promote more upward diffusion of the gas to the surface resulting in higher gas concentrations within the tarp-soil inter-space. Therefore, the experimental design provides an added conservative margin to the interpretation of hypothesized differences in the data.

Treatments

For this study, there were two treatments, tarped broadcast shallow and tarped broadcast deep. Each treatment was replicated three times as discrete application plots, 3 passes, 33 feet X 150 feet (see study field maps in Appendix 1). The treatment replicates were defined as *plots* and were numbered 1 through 6 according to the sequence of applications in each study field. Plots had an untreated space between them. Replicate plots from each treatment were paired in three blocks in each study field to account for any field variability across the fields. Application sequence varied between two study fields TC440.1 and TC440.2 in order to randomize the effect of the application.

The target dosage was 400 lbs/acre in each treatment. Actual application rates were determined for each replicated plot from the flowmeter computer and by weighing the fumigant cylinders. A separate fumigant cylinder was used and weighed for each replicated plot. The application rates and statistics are tabulated in Table 1 in Appendix 2. Actual application rates varied within reasonable limits except for one shallow broadcast treatment replicate (TC440.2, Plot 1) that received a 43% lower application rate.

Broadcast deep applications were applied at a depth of 21 inches with the standard deep shanks. Broadcast shallow applications were applied with a noble plow at a depth of 10 inches. Both application methods involved the same standard tarp laying system and used the same roll of tarp film for both treatments in each field and a second roll from the same batch on the second field.

Under Tarp and Soil Gas Samples

For both TC440.1 and TC440.2, a total of 12 soil-tarp inter-space gas samples were collected per treatment per sampling interval, 4 sample replicates per plot. The center pass in each plot was used for sampling and the outer passes were border passes. Sampling locations were selected in the central portion of the pass sampled, two in the central portion of the pass and two down the edges of each selected treatment pass. Gas tight, 20 cc glass syringes with 1-inch stainless steel needles were used to collect gas samples of 15 ml each. Gas samples were taken from the tarp / soil interface in accordance with Bolsa Research Associates SOP # BR-FD-003; "Soil Gas Sampling Methods", except for a slight modification; samples were collected via 1/4" diameter flexible polyethylene tubing as collection probes placed in the tarp-soil inter-space instead of poking through the tarp film. Septa were attached to the end of the tubes and the insertion holes were taped over so as to limit the escape of any gas from under the tarps. Probes were purged prior to sampling.

The fumigations were sequenced so as to facilitate the sampling schedule and subsequently provide higher precision on elapsed times from application to sampling. This was

important to minimize experimental error associated with sampling time. The result was that elapsed sampling times were within a few minutes of each other.

TC440.1 Field 1

Samples were collected over a 5-day period following application, 10 sampling intervals total. To capture peak concentrations, five sampling intervals were collected on the first elapsed day at approximately 0.5, 3, 9, 16 and 24 hours from application (time 0).

Subsequent to the first 24-hour period following application, samples were collected at 33 hours (~1.5 days), 52 hours (~2 days) and then approximately every 24 hours, once per day, for the duration of the study. The last samples were collected at 5 elapsed days (120 hours) from application. Actual sampling times were recorded.

TC440.2 Field 2

Samples were also collected over a 5-day period following application, 12 sampling intervals total. To capture peak concentrations, five sampling intervals were collected on the first elapsed day at approximately 2, 3.5, 10, 16 and 24 hours from application (time 0). Subsequent to the first 24-hour period following application, samples were collected at 33 hours (~1.5 days), 52 hours (~2 days) and then approximately every 24 hours, once per day, for the duration of the study. The last samples were collected at 5 elapsed days (120 hours) from application. Actual sampling times were recorded.

Sample Storage

Samples were stored in an ice chest container at ambient conditions to minimize temperature fluctuations until analysis. The syringes were subsequently analyzed by gas chromatography within a maximum of 19 hours from collection, with elapsed time from collection to analysis determined for each sample. The average time to analysis for TC440.1 was 6:44 hours, minimum was 3:10 hours and the maximum was 13:40 hours. The average time to analysis for TC440.2 was 8:48 hours, minimum was 3:00 hours and the maximum was 18:56 hours.

Gas Sample Analysis

The gas samples were analyzed on a Buck Model 910 Gas Chromatograph in accordance with GC analytical procedures detailed in Bolsa Research Associates SOP # BR-AP-001, "Film Permeability Testing"; sections 6, 9, 10, 11.1, 11.3, and 11.5. Analytical method details, sample chromatograms and sample calibration curves used in this study can be found in Appendix 8. Results of the sample analysis are contained in Table 2 and 3 in Appendix 3 and 4, respectively.

Quality Control and Sample Recovery

To maintain and monitor the quality of the analytical portion of this study, the following procedures were followed: 1) For each sampling interval, six "recovery/storage stability" samples were prepared; 2) For monitoring the accuracy and precision of the GC program, a calibration standard within the range of the expected sample results and the current calibration curve was run periodically during each GC run, typically after each 10 samples. Table 4 and 5 in Appendix 5 contain the results of the recovery analysis.

Six samples per interval were collected from a methyl bromide certified standard cylinder at the time of sample collection and stored in the same manner as the test samples. This was done by taking a standard into the field and filling the designated sample syringes from the standard and storing them with the field samples during the sampling, storage, and transportation to the lab. Three samples were collected at the beginning and three at the end of the sample collection period. Collection times and analysis times were recorded for treatment samples and recovery samples. The samples were analyzed during the same GC analytical run as the other samples and compared with immediate injections of the same standard (time 0, t_0). Recovery of gas samples with syringes is an inverse function of time. Estimates of recovery were calculated for each sampling interval by regressing the response area of the t_0 standards and field recovery samples versus the elapsed time from collection to analysis for the sample. The slope reflects the rate of sample loss. The intercept reflects the response of the standard injected immediately (time 0). The regression equation was utilized to calculate a *recovery correction factor* for each sample based upon the individual sample elapsed time from collection to analysis. As a

comparison check on the regression, the arithmetic mean recovery percentage was calculated for each interval based upon the average response for the average sample elapsed time from collection to analysis. In addition an estimate of 24-hour losses is calculated for each interval data set using the regression formula. The recovery correction factors are listed with the analytical results along with the calculated recovery percentage. Sample concentrations were adjusted using the recovery correction factor. Adjusted sample values were used for evaluation of treatment effects.

As an additional quality control check on analytical variability the coefficient of variation (as percentage standard deviation) was determined for the time 0 recovery standards.

Soil/tarp Temperature Data

Soil temperatures were monitored under the tarp in the tarp-soil inter-space, 6", 12" and 18" depth in representative plots for each of the treatments. The purpose of monitoring soil temperature and the tarp-soil inter-space temperature was to characterize conditions under which the test was done. Soil temperatures influence gas diffusion through the soil and film permeability varies directly with temperature. Soil-tarp inter-space temperatures represent rather closely the temperature of the tarp film. Data was recorded using Hobo micro data loggers at 6 minute recording intervals. Three separate monitoring locations were monitored with three separate loggers, two in TC440.1 and one in TC440.2 to provide replication of data. Since the temperature probes were not placed until after application, there was missing data for the first few hours. Soil temperature trends tend to follow semi-predictable sinusoidal trends, so data for the first few hours was estimated by back extrapolation using data from the same period the second day of the study.

Soil Characterization

The USDA Soil Survey for Kings County, CA, was referenced for the soil classification and general characteristics. The soil type in TC440.1 is classified as Kimberlina fine sandy loam, saline alkali. The soil type in TC440.2 is classified as Kimberlina fine sandy loam, sandy. Information and soil maps for the study sites are in Appendix 10.

To characterize the soil conditions at the time of fumigation, soil sample cores were collected at four depths, 0-6", 6-12" and 12-18" and 18-24"; at the three locations in each treatment block area. Samples were analyzed for soil moisture, texture, and bulk density. Soil sampling and analysis was done in accordance with Bolsa Research Associates SOP # BR-AP-004; "Determination of Soil % Moisture, Bulk Density, and Texture".

RESULTS

Concentration versus Time Profiles

The methyl bromide gas concentrations for both TC440.1 and TC440.2 followed a trend that was expected and also observed in previous studies. Graph 1 and 3 depict the interval average trends in Methyl bromide gas concentrations over the course of the two fields studied. The deeper methyl bromide is applied in the soil, the greater distance the gas travels through the soil profile to get to the surface. One could surmise that this would subsequently result in greater distribution of the gas in the soil profile and a greater length of time for the gas to arrive at the surface. This is illustrated in both TC440.1 and TC 440.2, with lower peak concentrations in the tarp-soil inter-space and a longer time to reach peak concentrations with the deep application.

TC440.1 - Field 1

In TC440.1, the concentrations in the deep treatment were significantly greater than the shallow treatment at the 99% level for the first three intervals. Interval 1, 0.5 hours from application was 30 times higher than the deep treatment and this interval had the maximum average concentration for the shallow treatment. The maximum average concentration for the deep treatment occurred later, as expected, during interval 3, 9 hours from application. Concentrations during interval 3 in the shallow treatment, however, were still 26% higher than the deep treatment. Intervals 4 and 5 had no significant differences between treatments at the 95% level (see ANOVA Tables 6 through 15 in Appendix 7). The deep treatment had slightly higher concentrations (statistically significant at the 99% level) than shallow for the remainder of the study, intervals 6 through 10. However, maximum deep

treatment concentrations at interval 6, 33 hours from application, were reduced to less than half of the maximum deep treatment concentrations that occurred in interval 3 and 25% of the maximum concentrations that occurred in the shallow application. Subsequent intervals 7 through 10 declined steadily. Trends of individual plots replicates are depicted in Graph 2.

The mean CT was calculated for comparison as an integrated measure of time and concentration. The results are contained in Table 26 in Appendix 6. CT was calculated from the soil-tarp inter-space methyl bromide gas concentrations for the specific interval and the interval period for each treatment. The interval period was obtained by taking the average time between the current and previous interval sampling time and subtracting it from the average time between the current and subsequent interval. The accumulative CT values were obtained from the summation of interval CT values. Accumulative CT in the Shallow treatment for the first 24 hours was 43% greater, and for the first 33 hours was 23%, greater than the deep treatment.

TC440.2 - Field 2

During TC440.2, the gas concentrations followed similar trends to the TC440.1. Graph 3 in Appendix 6 depicts the trend over the course of the study. Concentrations in the shallow treatment were significantly greater at the 99% level than the deep treatment during the first two intervals (see ANOVA Tables 16 through 25 in Appendix 7). Interval 1, 2 hours from application was 6 times higher than the deep treatment and this interval had the maximum average concentration for the shallow treatment. The maximum average concentration for the deep treatment occurred later, as expected, during interval 3, 10 hours from application. Although the average concentration was higher for the shallow treatment in the third interval, it was not statistically significant. This is due to the low application rate in Plot 1 (replicated Shallow treatment), which was 43% lower than the other plots. If this was removed or adjusted, the mean would be significantly higher. Intervals 4 and 5, 16 and 24-hour samplings were, again not significant at the 95% level. Again, the deep treatment had slightly higher concentrations (statistically significant at the 99% level) than shallow for the remainder of the study, intervals 6 through 10. Maximum

deep treatment concentrations at interval 6, 33 hours from application, were also reduced to less than half of the maximum deep treatment concentrations that occurred in interval 3 and 20% of the maximum concentrations that occurred in the shallow application. Concentrations were on a steady decline from interval 6, 33 hours and onward from to completion of the study. Trends of individual plot replicates are depicted in Graph 4.

Accumulative CT in the Shallow treatment for the first 24 hours was 45% greater, and for the first 33 hours was 28%, greater than the deep treatment. The comparison is depicted in Graph 5 in Appendix 6. A summary of the results are contained in Table 27 in Appendix 6.

Soil Temperatures

Soil temperatures ranged from 57°F to 158°F. The soil temperature trends are depicted in Graphs 7 through 9 in Appendix 9. Surface temperatures in the tarp-soil inter-space show as much as a 95°F temperature change between nocturnal and diurnal conditions at the surface. Temperature fluctuation shows typical decreasing amplitude with depth.

Temperatures at 18" were approximately 85 to 95°F over the course of the study in a general upward trend with nocturnal to diurnal fluctuations of only 2 to 3°F. As surface temperatures cool, the tarp becomes less permeable and slows emissions and, conversely, increases permeability with soil/tarp warming creating a bi-phasic trend. This is apparent in both studies in the increased concentrations at interval 5, the following morning after application when tarp-temperatures were the coolest. The lower permeability/emissions results in greater retention of gas beneath the tarp during the cool morning hours.

Soil Characterization

The soil moistures and bulk densities in study field for TC440.1 and TC440.2 are tabulated in Table 28 in Appendix 11. Textural analysis indicated the soil to be a sandy loam down to a depth of 24". Soil moisture varied from 6.2 to 8.2% for TC440.1 and 1.2 to 4.3% for TC440.2.

SUMMARY

The results of this study illustrated that the deep tarped application method resulted in significantly lower soil-tarp inter-space methyl bromide gas concentrations compared with the shallow treatment during the first 24 hours when peak concentrations for both application methods were the greatest. The 24-hour accumulative CT was 43% and 45% greater in the shallow treatment compared with the deep treatment, for TC440.1 and TC440.2, respectively. This provides support for the request that the emission ratio used for determining deep tarped buffer zones should be revised downward.

LITERATURE CITED

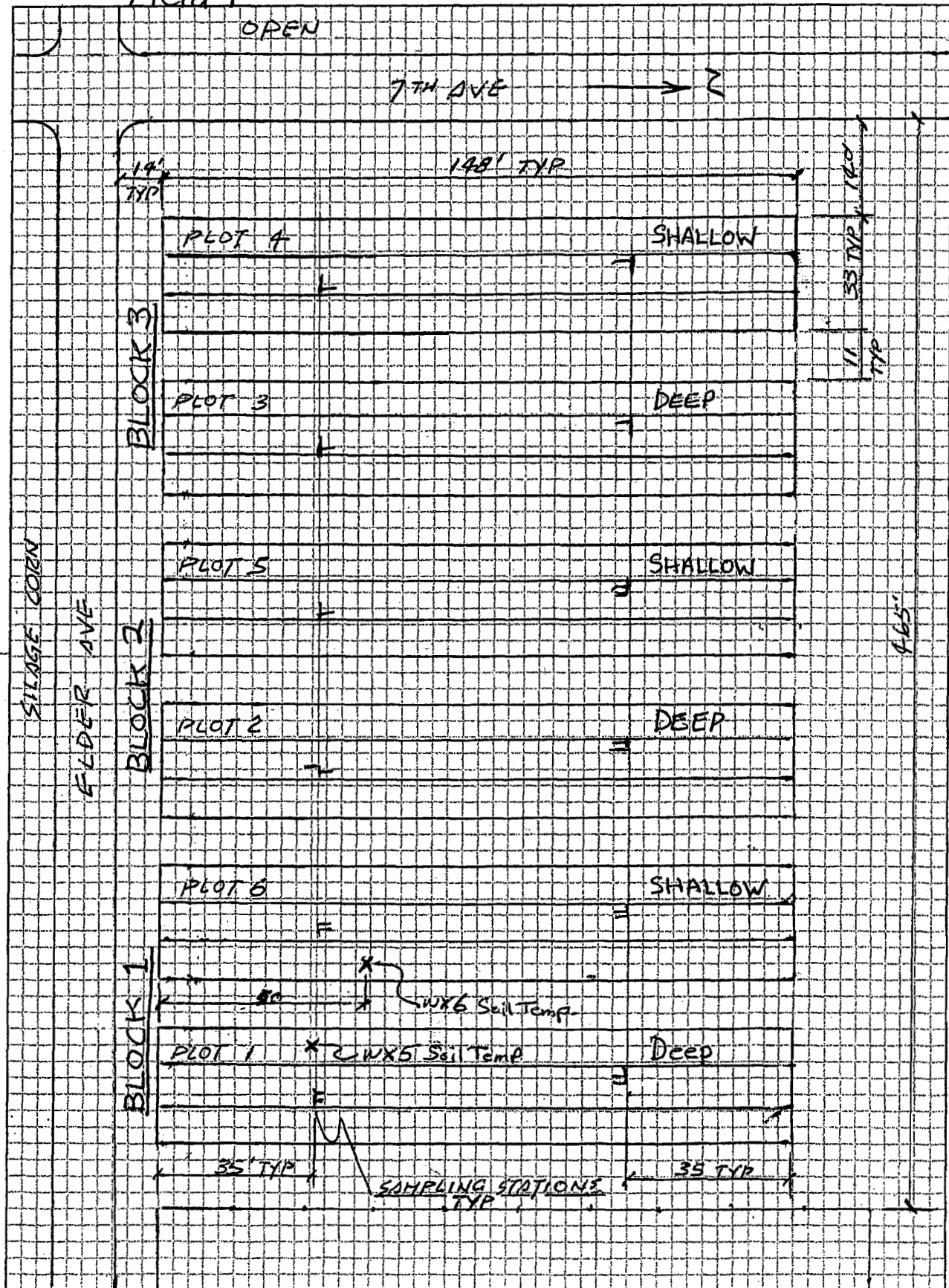
Gan et al., 1997. "Laboratory-scale measurements and simulations of effect of application methods on soil methyl bromide emission", J.Environ.Qual., 26:310-317.

Yates et al., 1997. "Methyl bromide emissions from agricultural fields: bare-soil, deep injection", Environ. Sci. Technol., 31:1136-1143.

Project No.: TC440.1

Field Plot Map

Map not to Scale

Signature: JULDate: 8 AUG 03

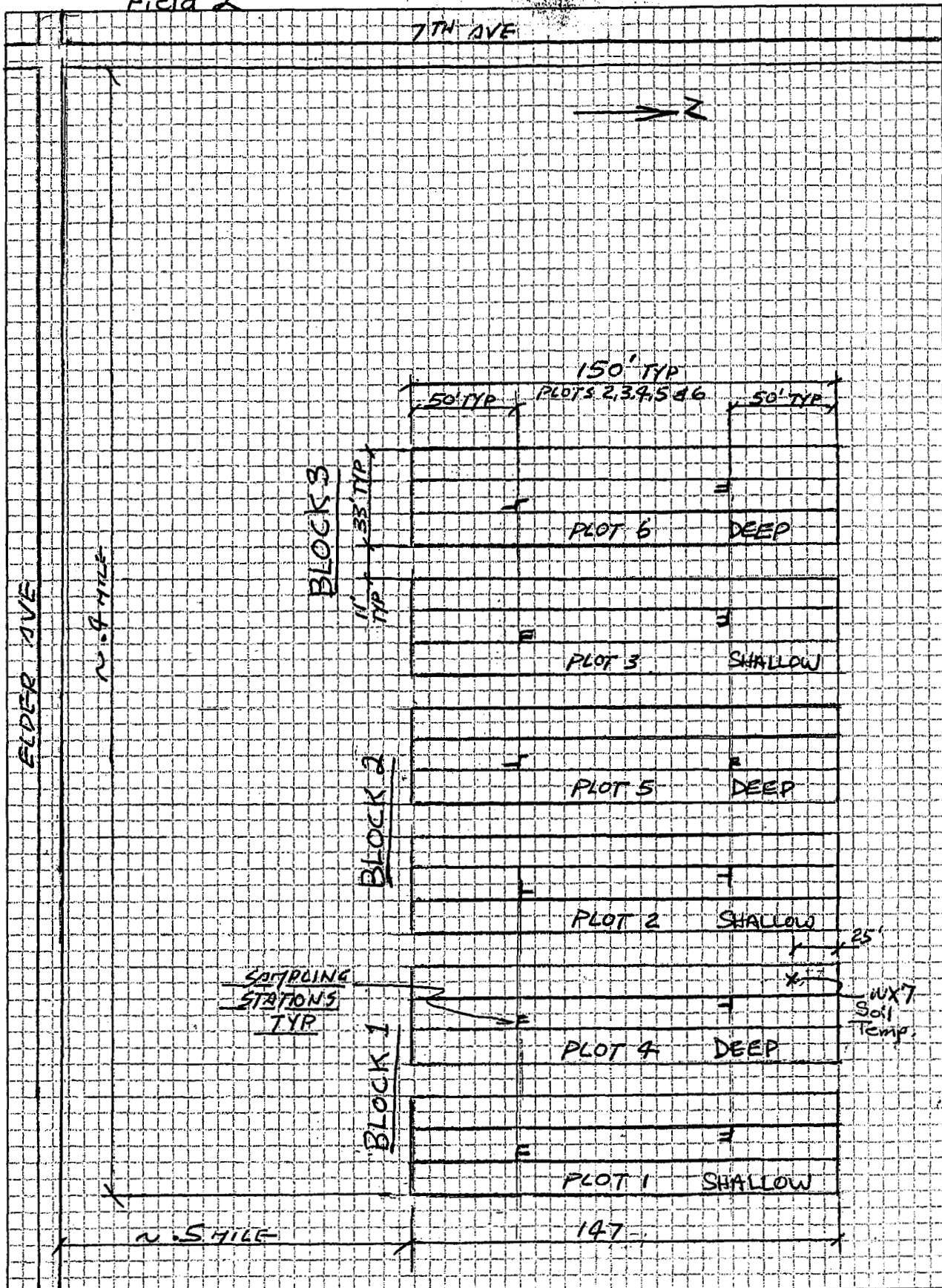
General Information Data Sheet

Project Number:	TC440.1 (Field 1)	
Comparison of Methyl Bromide Gas Concentrations in the Tarp Soil Inter-space: Deep Broadcast Tarp vs. Shallow Broadcast Tarp Fumigation		
Data Types Collected:	Soil Gas, soil cores (char.), Soil Temp., Meteorological	
Application and Study Date(s):	Application - 8/6/03	Study - 8/6/03 through 8/11/03
Purpose:	Bridge the relationship of emissions between the two application methods by comparing the relative under tarp methyl bromide gas concentrations over time	
Principle Investigator:	Matt Gillis	Phone #: (831)637-0195
Study Director:	Tom Duafala	Phone #: (831)637-0196
TRICAL Fieldman:	Bob Montgomery	Phone #: (559)737-3168
Grower:	Enns Packing	Phone #: (559)897-7700
Crop:	N/A	
Target Pest(s):	Nematodes, Weeds	
Location:	7th and Elder, Hanford, CA	
Site or Field #:	P1	
Use Permit #:	16-03-5401486	
Acreage:	0.67 acres treated	
Driver:	Johnny Marroquin	Tractor #s: Deep #219; Shallow #359
Tractor Configuration:	Shallow Broadcast Tarped Noble Plow; Deep Shank Broadcast Tarp	
TARP FILM	Cadillac, 1.0 mil Clear High Barrier Fumigation Film	
Fumigant:	Methyl Bromide 98%	EPA Reg.No.: 8536-19-11220
Dosage:	Target Dosage = 400 lbs/acre	
Method of Application:	Shallow Broadcast Tarped Noble Plow; Deep Shank Broadcast Tarp	
Injection Depth(s):	Shallow = 10"	Deep = 21"
Bed/Shank Spacing:	Shallow = 12"	Deep = 66"
Start of Applications:	Shallow - 7:27 am	Deep - 6:55 am
End of Applications:	Shallow - 7:50 am	Deep - 7:22 am

Project No.: TC 440-2
Field 2

Field Plot Map

Map not to Scale

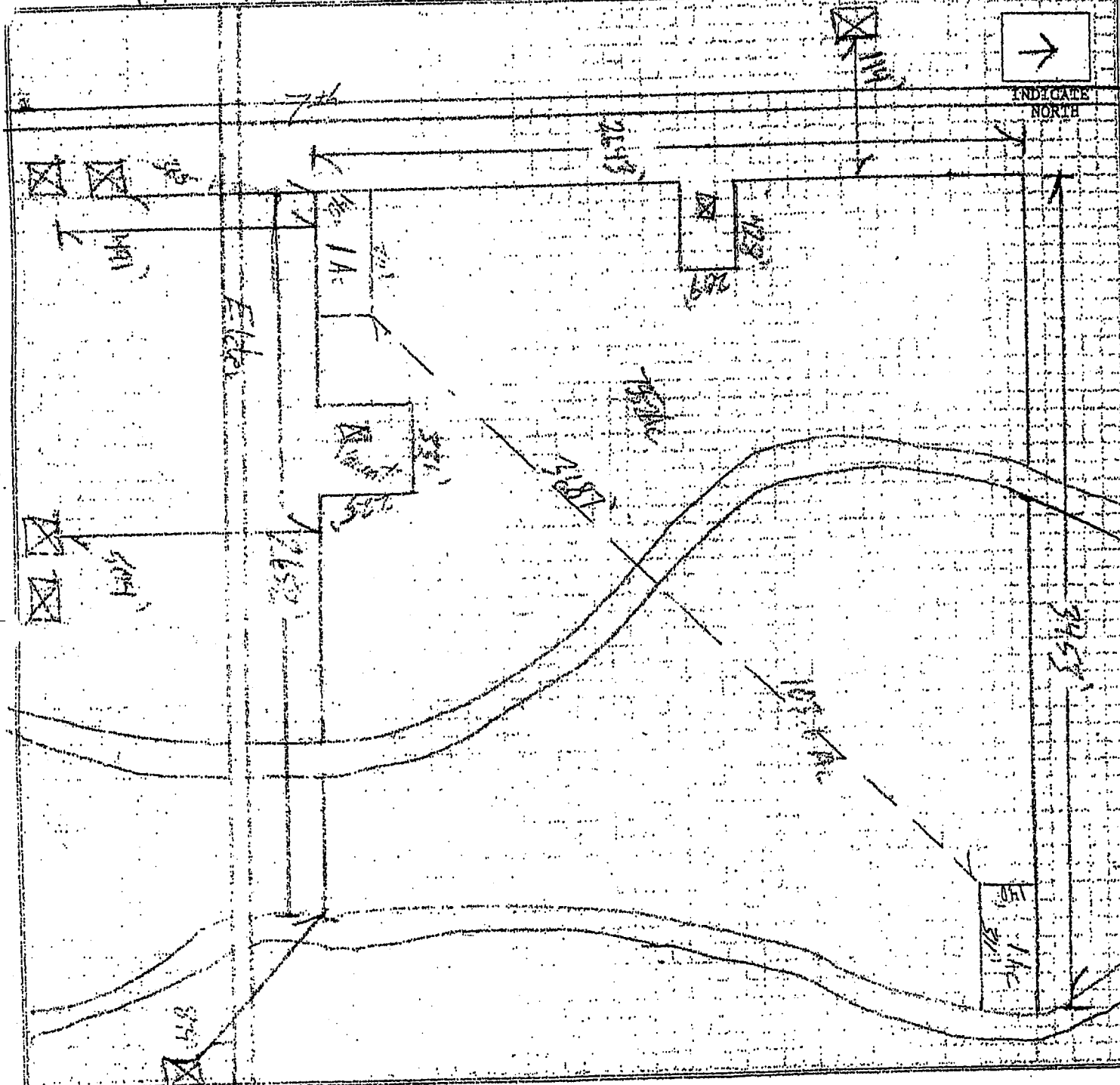
Signature: JMKDate: 8 AUG 03

General Information Data Sheet

Project Number:	TC440.2 (Field 2)	
Comparison of Methyl Bromide Gas Concentrations in the Tarp Soil Inter-space: Deep Broadcast Tarped vs. Shallow Broadcast Tarped Fumigation		
Data Types Collected:	Soil Gas, soil cores (char.), Soil Temp., Meteorological	
Application and Study Date(s):	Application - 8/6/03	Study - 8/6/03 through 8/11/03
Purpose:	Bridge the relationship of emissions between the two application methods by comparing the relative under tarp methyl bromide gas concentrations over time	
Principle Investigator:	Matt Gillis	Phone #: (831)637-0195
Study Director:	Tom Duafala	Phone #: (831)637-0196
TRICAL Fieldman:	Bob Montgomery	Phone #: (559)737-3168
Grower:	Enns Packing	Phone #: (559)897-7700
Crop:	N/A	
Target Pest(s):	Nematodes, Weeds	
Location:	7th and Elder, Hanford, CA	
Site or Field #:	P2	
Use Permit #:	16-03-5401486	
Acreage:	0.68 acres treated	
Driver:	Johnny Marroquin	Tractor #s: Deep #219; Shallow #359
Tractor Configuration:	Shallow Broadcast Tarped Noble Plow; Deep Shank Broadcast Tarp	
TARP FILM	Cadillac, 1.0 mil Clear High Barrier Fumigation Film	
Fumigant:	Methyl Bromide 98%	EPA Reg.No.: 8536-19-11220
Dosage:	Target Dosage = 400 lbs/acre	
Method of Application:	Shallow Broadcast Tarped Noble Plow; Deep Shank Broadcast Tarp	
Injection Depth(s):	Shallow = 10"	Deep = 21"
Bed/Shank Spacing:	Shallow = 12"	Deep = 66"
Start of Applications:	Shallow - 8:15 am	Deep - 8:46 am
End of Applications:	Shallow - 8:40 am	Deep - 9:07 am

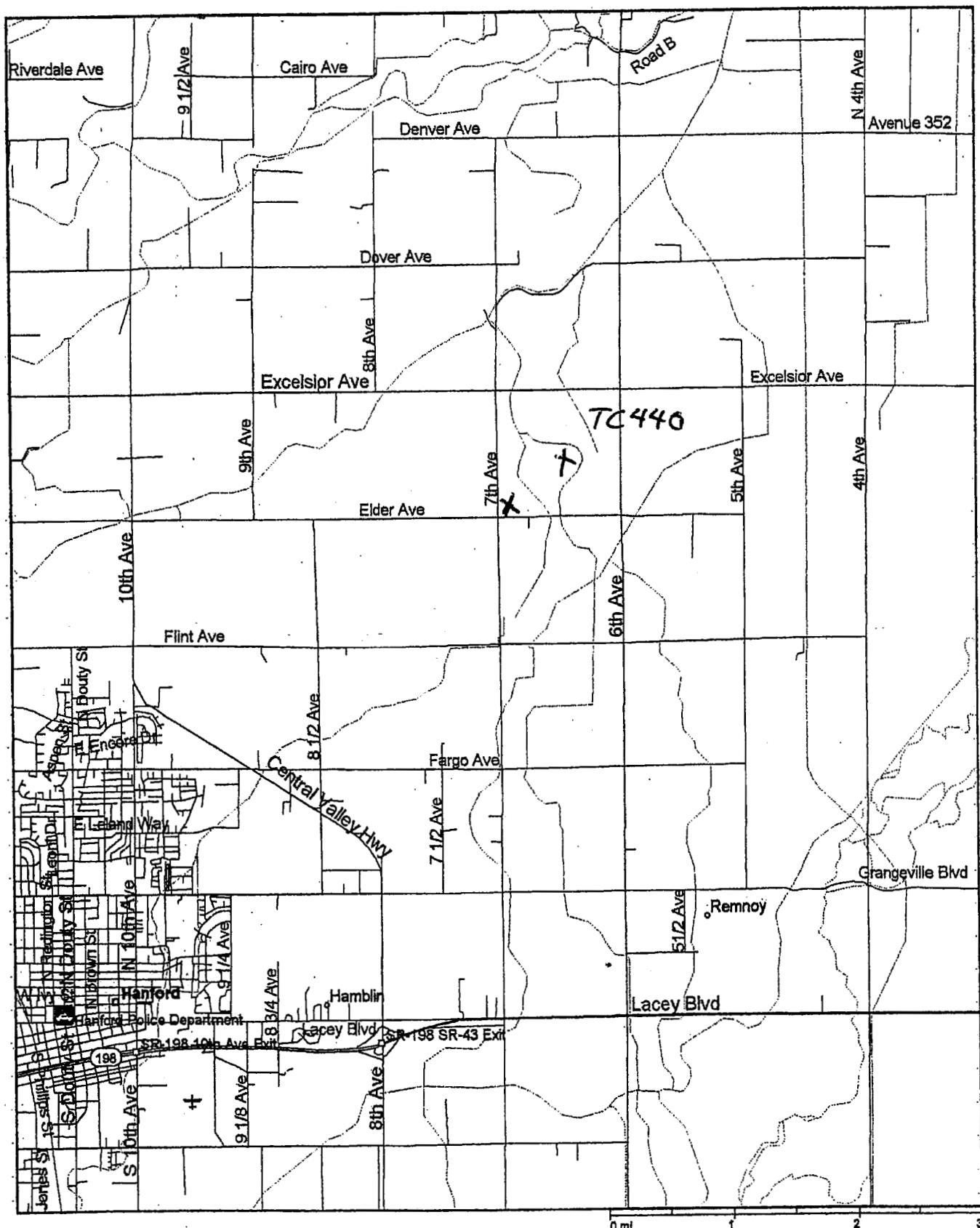
TRICAL, INC. - MAP FORM

PERMIT #: 16-03-5401486	GROWER: Euns Packing
SITE: P1 & P2	LOCATION: 7th & Elder Ph 897 7700



COMMENTS: Discy 400# MB 98-2 E R 160 Method 5 b1
 outer buffer 280# Inner Buffer 100#

SUBMITTED BY:	DATE:	TIME:
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Microsoft Maps
Streets98

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Page 1

Table 1
Evaluation of Application Rate and Mass Applied to Field Plots

Project Number: TC440

Comparison of Methyl Bromide Gas Concentrations in the Tarp Soil Inter-space:

STUDY TITLE: Deep Broadcast Tarped vs. Shallow Broadcast Tarped FumigationProduct Source: TRICAL Fumigant Inventory, Goshen FacilityFumigant: METHYL BROMIDE 98%EPA Registration No.: 8536-19-11220

Assigned Cylinder No. ^g	Cylinder Filled Weight	Cylinder Post Application Weight #2	Net Cylinder Amount Used (lbs)	Flowmeter Amount Used (lbs)	Field Plot #	Treatment	Field Plot Area (acres)	Field Plot Application Rates(lbs./acre)		Rate Differenc e	Cyl. Wgt. Difference from target rate	Cyl. Wgt. % Difference from target rate	Flowmeter Difference from target rate	Flowmeter % Difference from target rate	Based Upon Flowmeter			Based Upon Cyl. Wgts.		
								Based Upon Flowmeter	Based Upon Cyl. Wgts.						Average Treatment Application Rate (lbs./acre)	Standard Deviation of Application Rate (lbs./acre)	% Std.Dev. (CV)	Average Treatment Application Rate (lbs./acre)	Standard Deviation of Application Rate (lbs./acre)	% Std.Dev. (CV)
2	426	375	51	45	TC440.1-1	DEEP	0.112	401	455	54	55	14%	1	0%	395	10	3%	422	31	7%
3	430	383	47	43	TC440.1-2	DEEP	0.112	384	419	36	19	5%	-16	-4%						
4	426	382	44	45	TC440.1-3	DEEP	0.112	401	392	-9	-8	-2%	1	0%						
9	435	390	45	43	TC440.1-4	SHALLOW	0.112	384	401	18	1	0%	-16	-4%	395	14	3%	395	19	5%
12	428	382	46	46	TC440.1-5	SHALLOW	0.112	410	410	0	10	3%	10	3%						
8	430	388	42	44	TC440.1-6	SHALLOW	0.112	392	375	-18	-25	-6%	-8	-2%						
14	428	402	26	44	TC440.2-1	SHALLOW	0.114	387	229	-158	-171	-43%	-13	-3%	387	0	0%	331	92	28%
10	426	385	41	44	TC440.2-2	SHALLOW	0.114	387	361	-26	-39	-10%	-13	-3%						
13	433	387	46	44	TC440.2-3	SHALLOW	0.114	387	405	18	5	1%	-13	-3%						
5	433	377	56	45	TC440.2-4	DEEP	0.114	396	493	97	93	23%	-4	-1%	390	5	1%	434	62	14%
7	430	380	50	44	TC440.2-5	DEEP	0.114	387	440	53	40	10%	-13	-3%						
6	422	380	42	44	TC440.2-6	DEEP	0.114	387	370	-18	-30	-8%	-13	-3%						

^g Cylinder Serial No. recorded on raw data sheet

Plot 2-1 proportion of 400 lb rate = 0.57

Table 2

Table 2 - SOIL GAS DATA ANALYSIS TABLE

Project #: TC440.1

Comparison of Methyl Bromide Gas Concentrations in the Tarp Soil Inter-space: Deep Broadcast Tarp vs.
Shallow Broadcast Tarp Fumigation

Plot #	Application Date/Time:
Plot 1	8/6/03 6:58
Plot 2	8/6/03 7:08
Plot 3	8/6/03 7:17
Plot 4	8/6/03 7:29
Plot 5	8/6/03 7:41
Plot 6	8/6/03 7:47

Minimum ETA for Treatment Samples: 3:10

Average ETA for Treatment Samples: 6:44

Maximum ETA for Treatment Samples: 13:40

Syringe Sample Volume (mL): 15 mL

Syringe Sample Volume (mL): 15 mL															MeBr Gas Conc (ppmv) Adjusted									
Sampling Location						Times																		
Sample No.	Interval	Plot #	Sample Rep	Position	Depth	Treatment	Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)	Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)	
4401001	1	1	A	Pass Center	0" (STI)	DEEP	8/6/03 7:28	0:30	8/6/03 14:48	7:20	1.061	94%	145	154	147	120	81%							
4401002	1	1	B	Pass Edge	0" (STI)	DEEP	8/6/03 7:29	0:31	8/6/03 14:50	7:21	1.061	94%	20	22										
4401003	1	1	C	Pass Center	0" (STI)	DEEP	8/6/03 7:31	0:33	8/6/03 14:52	7:21	1.061	94%	289	307										
4401004	1	1	D	Pass Edge	0" (STI)	DEEP	8/6/03 7:32	0:34	8/6/03 14:55	7:23	1.061	94%	100	106										
4401005	1	2	A	Pass Center	0" (STI)	DEEP	8/6/03 7:38	0:30	8/6/03 14:59	7:21	1.061	94%	444	471										
4401006	1	2	B	Pass Edge	0" (STI)	DEEP	8/6/03 7:39	0:31	8/6/03 15:03	7:24	1.062	94%	291	308										
4401007	1	2	C	Pass Center	0" (STI)	DEEP	8/6/03 7:41	0:33	8/6/03 15:07	7:26	1.062	94%	604	641										
4401008	1	2	D	Pass Edge	0" (STI)	DEEP	8/6/03 7:42	0:34	8/6/03 15:11	7:29	1.062	94%	467	496	479	136	28%							
4401009	1	3	A	Pass Center	0" (STI)	DEEP	8/6/03 7:47	0:30	8/6/03 15:14	7:27	1.062	94%	451	479										
4401010	1	3	B	Pass Edge	0" (STI)	DEEP	8/6/03 7:48	0:31	8/6/03 15:19	7:31	1.063	94%	451	479										
4401011	1	3	C	Pass Center	0" (STI)	DEEP	8/6/03 7:50	0:33	8/6/03 15:22	7:32	1.063	94%	561	596										
4401012	1	3	D	Pass Edge	0" (STI)	DEEP	8/6/03 7:51	0:34	8/6/03 15:24	7:33	1.063	94%	3425	3640										
4401013	1	4	A	Pass Center	0" (STI)	SHALLOW	8/6/03 7:59	0:30	8/6/03 15:27	7:28	1.062	94%	32162	34159										
4401014	1	4	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 8:00	0:31	8/6/03 15:31	7:31	1.063	94%	34368	36516	29713	6734	23%							
4401015	1	4	C	Pass Center	0" (STI)	SHALLOW	8/6/03 8:02	0:33	8/6/03 15:33	7:31	1.063	94%	20943	22253										
4401016	1	4	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 8:03	0:34	8/6/03 15:37	7:34	1.063	94%	24390	25925										
4401017	1	5	A	Pass Center	0" (STI)	SHALLOW	8/6/03 8:11	0:30	8/6/03 15:41	7:30	1.062	94%	8877	9432										
4401018	1	5	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 8:12	0:31	8/6/03 15:44	7:32	1.063	94%	14721	15643										
4401019	1	5	C	Pass Center	0" (STI)	SHALLOW	8/6/03 8:14	0:33	8/6/03 16:15	8:01	1.067	94%	11949	12749										
4401020	1	5	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 8:15	0:34	8/6/03 16:17	8:02	1.067	94%	14948	15952				13444	3039	23%				

Table 2

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times				Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) <i>Unadjusted for Recovery</i>	Adjusted Sample Conc.	MeBr Gas Conc (ppmv) <i>Adjusted</i>											
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)					Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)			
4401021	1	6	A	Pass Center	0" (STI)	SHALLOW	8/6/03 8:17	0:30	8/6/03 16:22	8:05	1.068	94%	9361	9994	15046	4053	27%	19401	8822	45%	21625	8297	38%			
4401022	1	6	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 8:18	0:31	8/6/03 16:24	8:06	1.068	94%	14898	15907												
4401023	1	6	C	Pass Center	0" (STI)	SHALLOW	8/6/03 8:21	0:34	8/6/03 16:27	8:06	1.068	94%	13557	14475										17177	9515	55%
4401024	1	6	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 8:22	0:35	8/6/03 16:29	8:07	1.068	94%	18550	19809												
4401025	2	1	A	Pass Center	0" (STI)	DEEP	8/6/03 10:04	3:06	8/6/03 17:20	7:16	1.065	94%	2668	2841	2707	746	28%									
4401026	2	1	B	Pass Edge	0" (STI)	DEEP	8/6/03 10:05	3:07	8/6/03 17:26	7:21	1.066	94%	1617	1723												
4401027	2	1	C	Pass Center	0" (STI)	DEEP	8/6/03 10:06	3:08	8/6/03 18:09	8:03	1.072	93%	3294	3533												
4401028	2	1	D	Pass Edge	0" (STI)	DEEP	8/6/03 10:06	3:08	8/6/03 18:11	8:05	1.073	93%	2548	2733												
4401029	2	2	A	Pass Center	0" (STI)	DEEP	8/6/03 10:13	3:05	8/6/03 18:13	8:00	1.072	93%	2742	2939	4215	2069	49%									
4401030	2	2	B	Pass Edge	0" (STI)	DEEP	8/6/03 10:13	3:05	8/6/03 18:16	8:03	1.072	93%	3080	3303												
4401031	2	2	C	Pass Center	0" (STI)	DEEP	8/6/03 10:15	3:07	8/6/03 18:18	8:03	1.072	93%	3086	3309												
4401032	2	2	D	Pass Edge	0" (STI)	DEEP	8/6/03 10:16	3:08	8/6/03 18:20	8:04	1.073	93%	6812	7307												
4401033	2	3	A	Pass Center	0" (STI)	DEEP	8/6/03 10:22	3:05	8/6/03 18:23	8:01	1.072	93%	2912	3121	2638	322	12%	3187	1387	44%	3337	2010	60%			
4401034	2	3	B	Pass Edge	0" (STI)	DEEP	8/6/03 10:23	3:06	8/6/03 18:25	8:02	1.072	93%	2311	2478												
4401035	2	3	C	Pass Center	0" (STI)	DEEP	8/6/03 10:25	3:08	8/6/03 18:25	8:00	1.072	93%	2311	2477										3037	371	12%
4401036	2	3	D	Pass Edge	0" (STI)	DEEP	8/6/03 10:26	3:09	8/6/03 18:25	7:59	1.072	93%	2311	2477												
4401037	2	4	A	Pass Center	0" (STI)	SHALLOW	8/6/03 10:32	3:03	8/6/03 18:50	8:18	1.075	93%	15194	16332	17229	2237	13%									
4401038	2	4	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:33	3:04	8/6/03 18:53	8:20	1.075	93%	19109	20546												
4401039	2	4	C	Pass Center	0" (STI)	SHALLOW	8/6/03 10:34	3:05	8/6/03 18:55	8:21	1.075	93%	15242	16390												
4401040	2	4	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:34	3:05	8/6/03 18:57	8:23	1.076	93%	14548	15648												
4401041	2	5	A	Pass Center	0" (STI)	SHALLOW	8/6/03 10:44	3:03	8/6/03 19:00	8:16	1.074	93%	9861	10596	13957	4681	34%									
4401042	2	5	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:45	3:04	8/6/03 19:02	8:17	1.075	93%	12419	13347												
4401043	2	5	C	Pass Center	0" (STI)	SHALLOW	8/6/03 10:46	3:05	8/6/03 19:04	8:18	1.075	93%	10361	11137												
4401044	2	5	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:47	3:06	8/6/03 19:07	8:20	1.075	93%	19296	20747												
4401045	2	6	A	Pass Center	0" (STI)	SHALLOW	8/6/03 10:50	3:03	8/6/03 19:10	8:20	1.075	93%	9724	10455	12661	1637	13%	14616	3479	24%	16190	3604	22%			
4401046	2	6	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:50	3:03	8/6/03 19:12	8:22	1.075	93%	11667	12547												
4401047	2	6	C	Pass Center	0" (STI)	SHALLOW	8/6/03 10:53	3:06	8/6/03 19:16	8:23	1.076	93%	12401	13340										13042	2772	21%
4401048	2	6	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:53	3:06	8/6/03 19:19	8:26	1.076	93%	13291	14303												

Table 2

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times					Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	MeBr Gas Conc (ppmv) Adjusted							Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)	Recovery Correction Factor			Theoretical % Recovered	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)			
4401049	3	1	A	Pass Center	0" (STI)	DEEP	8/6/03 15:58	9:00	8/6/03 19:19	3:21	1.067	94%	13291	14186	11016	2114	19%						
4401050	3	1	B	Pass Edge	0" (STI)	DEEP	8/6/03 15:59	9:01	8/7/03 4:28	12:29	1.308	76%	7677	10039									
4401051	3	1	C	Pass Center	0" (STI)	DEEP	8/6/03 16:01	9:03	8/7/03 4:31	12:30	1.308	76%	7587	9922									
4401052	3	1	D	Pass Edge	0" (STI)	DEEP	8/6/03 16:02	9:04	8/7/03 4:31	12:29	1.307	76%	7587	9918	10131	2186	22%						
4401053	3	2	A	Pass Center	0" (STI)	DEEP	8/6/03 16:08	9:00	8/7/03 4:33	12:25	1.305	77%	6736	8793									
4401054	3	2	B	Pass Edge	0" (STI)	DEEP	8/6/03 16:09	9:01	8/7/03 4:35	12:26	1.306	77%	6831	8921									
4401055	3	2	C	Pass Center	0" (STI)	DEEP	8/6/03 16:11	9:03	8/7/03 4:38	12:27	1.306	77%	7217	9428	9243	1432	15%	10130	1911	19%	10006	2136	21%
4401056	3	2	D	Pass Edge	0" (STI)	DEEP	8/6/03 16:12	9:04	8/7/03 4:40	12:28	1.307	77%	10242	13384									
4401057	3	3	A	Pass Center	0" (STI)	DEEP	8/6/03 16:17	9:00	8/7/03 4:43	12:26	1.306	77%	6279	8198									
4401058	3	3	B	Pass Edge	0" (STI)	DEEP	8/6/03 16:18	9:01	8/7/03 4:45	12:27	1.306	77%	6202	8102	11648	955	8%						
4401059	3	3	C	Pass Center	0" (STI)	DEEP	8/6/03 16:20	9:03	8/7/03 4:47	12:27	1.306	77%	7279	9509									
4401060	3	3	D	Pass Edge	0" (STI)	DEEP	8/6/03 16:21	9:04	8/7/03 4:54	12:33	1.309	76%	8526	11163									
4401061	3	4	A	Pass Center	0" (STI)	SHALLOW	8/6/03 16:29	9:00	8/7/03 4:56	12:27	1.306	77%	10158	13268	14238	2479	17%						
4401062	3	4	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 16:30	9:01	8/7/03 4:58	12:28	1.307	77%	13230	17291									
4401063	3	4	C	Pass Center	0" (STI)	SHALLOW	8/6/03 16:32	9:03	8/7/03 5:00	12:28	1.307	77%	11423	14929									
4401064	3	4	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 16:33	9:04	8/7/03 5:21	12:48	1.317	76%	8702	11464	11648	955	8%						
4401065	3	5	A	Pass Center	0" (STI)	SHALLOW	8/6/03 16:41	9:00	8/7/03 5:24	12:43	1.315	76%	8868	11659									
4401066	3	5	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 16:42	9:01	8/7/03 5:38	12:56	1.322	76%	7904	10450									
4401067	3	5	C	Pass Center	0" (STI)	SHALLOW	8/6/03 16:44	9:03	8/7/03 6:24	13:40	1.346	74%	8686	11695	12292	191	2%	12726	1805	14%	12764	2369	19%
4401068	3	5	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 16:45	9:04	8/7/03 5:44	12:59	1.324	76%	9659	12786									
4401069	3	6	A	Pass Center	0" (STI)	SHALLOW	8/6/03 16:47	9:00	8/7/03 6:26	13:39	1.346	74%	9199	12381									
4401070	3	6	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 16:48	9:01	8/7/03 5:49	13:01	1.325	75%	9118	12081	12292	191	2%	12726	1805	14%	12764	2369	19%
4401071	3	6	C	Pass Center	0" (STI)	SHALLOW	8/6/03 16:50	9:03	8/7/03 6:28	13:38	1.345	74%	9066	12197									
4401072	3	6	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 16:51	9:04	8/7/03 6:30	13:39	1.346	74%	9294	12510									

Table 2

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times					MeBr Gas Conc (ppmv) Adjusted											
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)	Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)
4401073	4	1	A	Pass Center	0" (STI)	DEEP	8/6/03 23:13	16:15	8/7/03 7:04	7:51	1.071	93%	7303	7824	9083	1010	11%						
4401074	4	1	B	Pass Edge	0" (STI)	DEEP	8/6/03 23:14	16:16	8/7/03 7:06	7:52	1.072	93%	8147	8730									
4401075	4	1	C	Pass Center	0" (STI)	DEEP	8/6/03 23:16	16:18	8/7/03 7:09	7:53	1.072	93%	9066	9716									
4401076	4	1	D	Pass Edge	0" (STI)	DEEP	8/6/03 23:17	16:19	8/7/03 7:12	7:55	1.072	93%	9383	10059	6898	1609	23%						
4401077	4	2	A	Pass Center	0" (STI)	DEEP	8/6/03 23:23	16:15	8/7/03 7:15	7:52	1.072	93%	8194	8780									
4401078	4	2	B	Pass Edge	0" (STI)	DEEP	8/6/03 23:24	16:16	8/7/03 7:17	7:53	1.072	93%	6214	6659									
4401079	4	2	C	Pass Center	0" (STI)	DEEP	8/6/03 23:26	16:18	8/7/03 7:19	7:53	1.072	93%	6777	7263	3835	627	16%	6605	2479	38%	6439	2502	39%
4401080	4	2	D	Pass Edge	0" (STI)	DEEP	8/6/03 23:27	16:19	8/7/03 7:22	7:55	1.072	93%	4560	4888									
4401081	4	3	A	Pass Center	0" (STI)	DEEP	8/6/03 23:32	16:15	8/7/03 7:24	7:52	1.072	93%	2700	2894									
4401082	4	3	B	Pass Edge	0" (STI)	DEEP	8/6/03 23:33	16:16	8/7/03 7:27	7:54	1.072	93%	3871	4150	4141	1	0%						
4401083	4	3	C	Pass Center	0" (STI)	DEEP	8/6/03 23:35	16:18	8/7/03 7:27	7:52	1.072	93%	3871	4148									
4401084	4	3	D	Pass Edge	0" (STI)	DEEP	8/6/03 23:36	16:19	8/7/03 7:27	7:51	1.071	93%	3871	4148									
4401085	4	4	A	Pass Center	0" (STI)	SHALLOW	8/6/03 23:44	16:15	8/7/03 7:27	7:43	1.070	93%	3871	4143	4134	1	0%						
4401086	4	4	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 23:45	16:16	8/7/03 7:27	7:42	1.070	93%	3871	4142									
4401087	4	4	C	Pass Center	0" (STI)	SHALLOW	8/6/03 23:47	16:18	8/7/03 7:27	7:40	1.070	93%	3871	4141									
4401088	4	4	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 23:48	16:19	8/7/03 7:27	7:39	1.070	93%	3871	4140	7852	317	4%	5376	1836	34%	5318	1832	34%
4401089	4	5	A	Pass Center	0" (STI)	SHALLOW	8/6/03 23:56	16:15	8/7/03 7:27	7:31	1.068	94%	3871	4135									
4401090	4	5	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 23:57	16:16	8/7/03 7:27	7:30	1.068	94%	3871	4135									
4401091	4	5	C	Pass Center	0" (STI)	SHALLOW	8/6/03 23:59	16:18	8/7/03 7:27	7:28	1.068	94%	3871	4133	7852	317	4%	5376	1836	34%	5318	1832	34%
4401092	4	5	D	Pass Edge	0" (STI)	SHALLOW	8/7/03 0:00	16:19	8/7/03 7:27	7:27	1.068	94%	3871	4133									
4401093	4	6	A	Pass Center	0" (STI)	SHALLOW	8/7/03 0:02	16:15	8/7/03 8:04	8:02	1.073	93%	7250	7781									
4401094	4	6	B	Pass Edge	0" (STI)	SHALLOW	8/7/03 0:03	16:16	8/7/03 8:08	8:05	1.074	93%	6988	7503	7852	317	4%	5376	1836	34%	5318	1832	34%
4401095	4	6	C	Pass Center	0" (STI)	SHALLOW	8/7/03 0:05	16:18	8/7/03 8:10	8:05	1.074	93%	7701	8269									
4401096	4	6	D	Pass Edge	0" (STI)	SHALLOW	8/7/03 0:06	16:19	8/7/03 8:12	8:06	1.074	93%	7313	7853									

Table 2

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times				Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) <i>Unadjusted for Recovery</i>	Adjusted Sample Conc.	MeBr Gas Conc (ppmv) <i>Adjusted</i>										
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)					Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)		
4401097	5	1	A	Pass Center	0" (STI)	DEEP	8/7/03 6:58	24:00	8/7/03 16:08	9:10	1.341	75%	6140	8236	8666	601	7%								
4401098	5	1	B	Pass Edge	0" (STI)	DEEP	8/7/03 6:59	24:01	8/7/03 16:09	9:10	1.342	75%	7117	9550											
4401099	5	1	C	Pass Center	0" (STI)	DEEP	8/7/03 7:00	24:02	8/7/03 16:12	9:12	1.343	74%	6219	8353											
4401100	5	1	D	Pass Edge	0" (STI)	DEEP	8/7/03 7:01	24:03	8/7/03 16:13	9:12	1.344	74%	6345	8525											
4401101	5	2	A	Pass Center	0" (STI)	DEEP	8/7/03 7:08	24:00	8/7/03 16:15	9:07	1.339	75%	6695	8966											
4401102	5	2	B	Pass Edge	0" (STI)	DEEP	8/7/03 7:09	24:01	8/7/03 16:17	9:08	1.340	75%	4847	6493											
4401103	5	2	C	Pass Center	0" (STI)	DEEP	8/7/03 7:10	24:02	8/7/03 16:18	9:08	1.340	75%	5815	7792	7759	1010	13%								
4401104	5	2	D	Pass Edge	0" (STI)	DEEP	8/7/03 7:11	24:03	8/7/03 16:18	9:07	1.339	75%	5815	7787											
4401105	5	3	A	Pass Center	0" (STI)	DEEP	8/7/03 7:17	24:00	8/7/03 16:26	9:09	1.341	75%	2597	3482											
4401106	5	3	B	Pass Edge	0" (STI)	DEEP	8/7/03 7:18	24:01	8/7/03 16:28	9:10	1.341	75%	2568	3445											
4401107	5	3	C	Pass Center	0" (STI)	DEEP	8/7/03 7:19	24:02	8/7/03 16:29	9:10	1.342	75%	6148	8251											
4401108	5	3	D	Pass Edge	0" (STI)	DEEP	8/7/03 7:20	24:03	8/7/03 16:31	9:11	1.343	74%	6073	8154											
															5833	2736	47%	7420	1985	27%	7326	2146	29%		
4401109	5	4	A	Pass Center	0" (STI)	SHALLOW	8/7/03 7:29	24:00	8/7/03 16:34	9:05	1.338	75%	4453	5957	5995	1447	24%								
4401110	5	4	B	Pass Edge	0" (STI)	SHALLOW	8/7/03 7:30	24:01	8/7/03 16:37	9:07	1.339	75%	5778	7737											
4401111	5	4	C	Pass Center	0" (STI)	SHALLOW	8/7/03 7:31	24:02	8/7/03 16:38	9:07	1.339	75%	3132	4195											
4401112	5	4	D	Pass Edge	0" (STI)	SHALLOW	8/7/03 7:32	24:03	8/7/03 16:40	9:08	1.340	75%	4547	6092											
4401113	5	5	A	Pass Center	0" (STI)	SHALLOW	8/7/03 7:41	24:00	8/7/03 16:52	9:11	1.343	74%	4786	6427											
4401114	5	5	B	Pass Edge	0" (STI)	SHALLOW	8/7/03 7:42	24:01	8/7/03 16:54	9:12	1.343	74%	2797	3758											
4401115	5	5	C	Pass Center	0" (STI)	SHALLOW	8/7/03 7:43	24:02	8/7/03 16:55	9:12	1.343	74%	5394	7246	6366	1859	29%								
4401116	5	5	D	Pass Edge	0" (STI)	SHALLOW	8/7/03 7:44	24:03	8/7/03 16:57	9:13	1.344	74%	5979	8035											
4401117	5	6	A	Pass Center	0" (STI)	SHALLOW	8/7/03 7:47	24:00	8/7/03 16:59	9:12	1.343	74%	6235	8375											
4401118	5	6	B	Pass Edge	0" (STI)	SHALLOW	8/7/03 7:48	24:01	8/7/03 17:01	9:13	1.344	74%	5911	7942											
4401119	5	6	C	Pass Center	0" (STI)	SHALLOW	8/7/03 7:49	24:02	8/7/03 17:03	9:14	1.345	74%	4294	5773											
4401120	5	6	D	Pass Edge	0" (STI)	SHALLOW	8/7/03 7:50	24:03	8/7/03 17:04	9:14	1.345	74%	4085	5494											
															6896	1473	21%	6419	1502	23%	6510	1713	26%		

Table 2

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times				Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	MeBr Gas Conc (ppmv) Adjusted								
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)					Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)
4401121	6	1	A	Pass Center	0" (STD)	DEEP	8/7/03 15:58	33:00	8/7/03 22:15	6:17	1.106	90%	4598	5085	5549	329	6%						
4401122	6	1	B	Pass Edge	0" (STD)	DEEP	8/7/03 15:59	33:01	8/7/03 22:16	6:17	1.106	90%	5195	5746									
4401123	6	1	C	Pass Center	0" (STD)	DEEP	8/7/03 16:00	33:02	8/7/03 22:18	6:18	1.106	90%	5018	5552									
4401124	6	1	D	Pass Edge	0" (STD)	DEEP	8/7/03 16:01	33:03	8/7/03 22:20	6:19	1.106	90%	5256	5816									
4401125	6	2	A	Pass Center	0" (STD)	DEEP	8/7/03 16:08	33:00	8/7/03 22:23	6:15	1.105	90%	4391	4854	5371	521	10%						
4401126	6	2	B	Pass Edge	0" (STD)	DEEP	8/7/03 16:09	33:01	8/7/03 22:25	6:16	1.106	90%	4544	5024									
4401127	6	2	C	Pass Center	0" (STD)	DEEP	8/7/03 16:10	33:02	8/7/03 22:26	6:16	1.106	90%	5394	5964									
4401128	6	2	D	Pass Edge	0" (STD)	DEEP	8/7/03 16:11	33:03	8/7/03 22:28	6:17	1.106	90%	5101	5642									
4401129	6	3	A	Pass Center	0" (STD)	DEEP	8/7/03 16:17	33:00	8/7/03 22:30	6:13	1.105	91%	2127	2350	3798	1529	40%	4906	1190	24%	5023	1267	26%
4401130	6	3	B	Pass Edge	0" (STD)	DEEP	8/7/03 16:18	33:01	8/7/03 22:33	6:15	1.105	90%	2368	2618									
4401131	6	3	C	Pass Center	0" (STD)	DEEP	8/7/03 16:19	33:02	8/7/03 22:40	6:21	1.107	90%	4455	4932									
4401132	6	3	D	Pass Edge	0" (STD)	DEEP	8/7/03 16:20	33:03	8/7/03 22:43	6:23	1.108	90%	4778	5294									
4401133	6	4	A	Pass Center	0" (STD)	SHALLOW	8/7/03 16:29	33:00	8/7/03 22:45	6:16	1.106	90%	3298	3646	3592	176	5%						
4401134	6	4	B	Pass Edge	0" (STD)	SHALLOW	8/7/03 16:30	33:01	8/7/03 22:48	6:18	1.106	90%	3437	3801									
4401135	6	4	C	Pass Center	0" (STD)	SHALLOW	8/7/03 16:31	33:02	8/7/03 22:49	6:18	1.106	90%	3199	3539									
4401136	6	4	D	Pass Edge	0" (STD)	SHALLOW	8/7/03 16:32	33:03	8/7/03 22:51	6:19	1.106	90%	3057	3383									
4401137	6	5	A	Pass Center	0" (STD)	SHALLOW	8/7/03 16:41	33:00	8/7/03 23:00	6:19	1.106	90%	3047	3371	3198	453	14%						
4401138	6	5	B	Pass Edge	0" (STD)	SHALLOW	8/7/03 16:42	33:01	8/7/03 23:02	6:20	1.107	90%	2332	2581									
4401139	6	5	C	Pass Center	0" (STD)	SHALLOW	8/7/03 16:43	33:02	8/7/03 23:04	6:21	1.107	90%	2877	3186									
4401140	6	5	D	Pass Edge	0" (STD)	SHALLOW	8/7/03 16:44	33:03	8/7/03 23:07	6:23	1.108	90%	3297	3652									
4401141	6	6	A	Pass Center	0" (STD)	SHALLOW	8/7/03 16:47	33:00	8/7/03 23:10	6:23	1.108	90%	3579	3964	3489	341	10%	3426	356	10%	3369	427	13%
4401142	6	6	B	Pass Edge	0" (STD)	SHALLOW	8/7/03 16:48	33:01	8/7/03 23:12	6:24	1.108	90%	3157	3498									
4401143	6	6	C	Pass Center	0" (STD)	SHALLOW	8/7/03 16:49	33:02	8/7/03 23:14	6:25	1.108	90%	2884	3196									
4401144	6	6	D	Pass Edge	0" (STD)	SHALLOW	8/7/03 16:50	33:03	8/7/03 23:22	6:32	1.111	90%	2968	3297									

Table 2

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times				Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	MeBr Gas Conc (ppmv) Adjusted										
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)			Recovery Correction Factor	Theoretical % Recovered	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)
4401145	7	1	A	Pass Center	0" (ST)	DEEP	8/8/03 11:25	52:27	8/8/03 16:26	5:01	1.125	89%	3156	3549	3856	298	8%						
4401146	7	1	B	Pass Edge	0" (ST)	DEEP	8/8/03 11:26	52:28	8/8/03 16:28	5:02	1.125	89%	3255	3663									
4401147	7	1	C	Pass Center	0" (ST)	DEEP	8/8/03 11:27	52:29	8/8/03 16:31	5:04	1.126	89%	3586	4039									
4401148	7	1	D	Pass Edge	0" (ST)	DEEP	8/8/03 11:28	52:30	8/8/03 16:33	5:05	1.126	89%	3706	4174	3507	372	11%						
4401149	7	2	A	Pass Center	0" (ST)	DEEP	8/8/03 11:35	52:27	8/8/03 16:35	5:00	1.124	89%	3258	3661									
4401150	7	2	B	Pass Edge	0" (ST)	DEEP	8/8/03 11:36	52:28	8/8/03 16:37	5:01	1.125	89%	2670	3002									
4401151	7	2	C	Pass Center	0" (ST)	DEEP	8/8/03 11:37	52:29	8/8/03 16:39	5:02	1.125	89%	3099	3487	2481	1142	46%	3281	888	27%	3285	950	29%
4401152	7	2	D	Pass Edge	0" (ST)	DEEP	8/8/03 11:38	52:30	8/8/03 16:41	5:03	1.125	89%	3444	3876									
4401153	7	3	A	Pass Center	0" (ST)	DEEP	8/8/03 11:44	52:27	8/8/03 16:42	4:58	1.123	89%	1303	1463									
4401154	7	3	B	Pass Edge	0" (ST)	DEEP	8/8/03 11:45	52:28	8/8/03 16:44	4:59	1.124	89%	1353	1520							3277	913	28%
4401155	7	3	C	Pass Center	0" (ST)	DEEP	8/8/03 11:46	52:29	8/8/03 16:51	5:05	1.126	89%	3076	3465									
4401156	7	3	D	Pass Edge	0" (ST)	DEEP	8/8/03 11:47	52:30	8/8/03 16:53	5:06	1.127	89%	3084	3474									
4401157	7	4	A	Pass Center	0" (ST)	SHALLOW	8/8/03 11:56	52:27	8/8/03 16:55	4:59	1.123	89%	1564	1757	1871	266	14%						
4401158	7	4	B	Pass Edge	0" (ST)	SHALLOW	8/8/03 11:57	52:28	8/8/03 16:57	5:00	1.124	89%	1987	2234									
4401159	7	4	C	Pass Center	0" (ST)	SHALLOW	8/8/03 11:58	52:29	8/8/03 16:59	5:01	1.124	89%	1434	1612									
4401160	7	4	D	Pass Edge	0" (ST)	SHALLOW	8/8/03 11:59	52:30	8/8/03 17:02	5:03	1.125	89%	1670	1879	2002	505	25%						
4401161	7	5	A	Pass Center	0" (ST)	SHALLOW	8/8/03 12:08	52:27	8/8/03 17:03	4:55	1.122	89%	1750	1963									
4401162	7	5	B	Pass Edge	0" (ST)	SHALLOW	8/8/03 12:09	52:28	8/8/03 17:05	4:56	1.122	89%	1188	1333									
4401163	7	5	C	Pass Center	0" (ST)	SHALLOW	8/8/03 12:10	52:29	8/8/03 17:07	4:57	1.123	89%	1934	2171									
4401164	7	5	D	Pass Edge	0" (ST)	SHALLOW	8/8/03 12:11	52:30	8/8/03 17:08	4:57	1.123	89%	2261	2539									
4401165	7	6	A	Pass Center	0" (ST)	SHALLOW	8/8/03 12:14	52:27	8/8/03 17:13	4:59	1.124	89%	2262	2542									
4401166	7	6	B	Pass Edge	0" (ST)	SHALLOW	8/8/03 12:15	52:28	8/8/03 17:15	5:00	1.124	89%	2068	2325									
4401167	7	6	C	Pass Center	0" (ST)	SHALLOW	8/8/03 12:16	52:29	8/8/03 17:16	5:00	1.124	89%	1563	1757									
4401168	7	6	D	Pass Edge	0" (ST)	SHALLOW	8/8/03 12:17	52:30	8/8/03 17:18	5:01	1.124	89%	1496	1682									

Table 2

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times				Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	MeBr Gas Conc (ppmv) Adjusted													
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)					Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)					
4401169	8	1	A	Pass Center	0" (STI)	DEEP	8/9/03 11:25	76:27	8/9/03 14:40	3:15	1.072	93%	1947	2086														
4401170	8	1	B	Pass Edge	0" (STI)	DEEP	8/9/03 11:26	76:28	8/9/03 14:43	3:17	1.072	93%	2088	2239														
4401171	8	1	C	Pass Center	0" (STI)	DEEP	8/9/03 11:27	76:29	8/9/03 14:45	3:18	1.073	93%	2235	2397														
4401172	8	1	D	Pass Edge	0" (STI)	DEEP	8/9/03 11:28	76:30	8/9/03 14:47	3:19	1.073	93%	2348	2520	2311	189	8%											
4401173	8	2	A	Pass Center	0" (STI)	DEEP	8/9/03 11:35	76:27	8/9/03 14:48	3:13	1.071	93%	1874	2007														
4401174	8	2	B	Pass Edge	0" (STI)	DEEP	8/9/03 11:36	76:28	8/9/03 14:50	3:14	1.071	93%	1923	2060														
4401175	8	2	C	Pass Center	0" (STI)	DEEP	8/9/03 11:37	76:29	8/9/03 14:51	3:14	1.071	93%	1398	1498	1771	304	17%											
4401176	8	2	D	Pass Edge	0" (STI)	DEEP	8/9/03 11:38	76:30	8/9/03 14:53	3:15	1.072	93%	1416	1518														
4401177	8	3	A	Pass Center	0" (STI)	DEEP	8/9/03 11:44	76:27	8/9/03 14:55	3:11	1.070	93%	793	849														
4401178	8	3	B	Pass Edge	0" (STI)	DEEP	8/9/03 11:45	76:28	8/9/03 14:56	3:11	1.070	93%	827	885														
4401179	8	3	C	Pass Center	0" (STI)	DEEP	8/9/03 11:46	76:29	8/9/03 15:20	3:34	1.079	93%	1940	2093														
4401180	8	3	D	Pass Edge	0" (STI)	DEEP	8/9/03 11:47	76:30	8/9/03 15:23	3:36	1.080	93%	1798	1941														
															1442	667	46%	1841	544	30%	1861	582	31%					
4401181	8	4	A	Pass Center	0" (STI)	SHALLOW	8/9/03 11:56	76:27	8/9/03 15:28	3:32	1.078	93%	814	878														
4401182	8	4	B	Pass Edge	0" (STI)	SHALLOW	8/9/03 11:57	76:28	8/9/03 15:31	3:34	1.079	93%	1060	1144														
4401183	8	4	C	Pass Center	0" (STI)	SHALLOW	8/9/03 11:58	76:29	8/9/03 15:34	3:36	1.080	93%	849	916	984	118	12%											
4401184	8	4	D	Pass Edge	0" (STI)	SHALLOW	8/9/03 11:59	76:30	8/9/03 15:36	3:37	1.080	93%	924	998														
4401185	8	5	A	Pass Center	0" (STI)	SHALLOW	8/9/03 12:08	76:27	8/9/03 15:39	3:31	1.078	93%	945	1019														
4401186	8	5	B	Pass Edge	0" (STI)	SHALLOW	8/9/03 12:09	76:28	8/9/03 15:40	3:31	1.078	93%	633	682														
4401187	8	5	C	Pass Center	0" (STI)	SHALLOW	8/9/03 12:10	76:29	8/9/03 15:42	3:32	1.078	93%	1097	1183														
4401188	8	5	D	Pass Edge	0" (STI)	SHALLOW	8/9/03 12:11	76:30	8/9/03 15:43	3:32	1.078	93%	1176	1269														
4401189	8	6	A	Pass Center	0" (STI)	SHALLOW	8/9/03 12:14	76:27	8/9/03 15:45	3:31	1.078	93%	1259	1357														
4401190	8	6	B	Pass Edge	0" (STI)	SHALLOW	8/9/03 12:15	76:28	8/9/03 15:49	3:34	1.079	93%	1053	1136														
4401191	8	6	C	Pass Center	0" (STI)	SHALLOW	8/9/03 12:16	76:29	8/9/03 15:50	3:34	1.079	93%	844	911														
4401192	8	6	D	Pass Edge	0" (STI)	SHALLOW	8/9/03 12:17	76:30	8/9/03 15:52	3:35	1.079	93%	858	926	1083	210	19%	1035	189	18%	1026	207	20%					

Table 2

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times				Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	MeBr Gas Conc (ppmv) Adjusted									
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)					Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)	
4401193	9	1	A	Pass Center	0" (STI)	DEEP	8/10/03 11:25	100:27	8/10/03 14:40	3:15	1.059	94%	1510	1599	1445	150	10%							
4401194	9	1	B	Pass Edge	0" (STI)	DEEP	8/10/03 11:26	100:28	8/10/03 14:41	3:15	1.059	94%	1238	1311										
4401195	9	1	C	Pass Center	0" (STI)	DEEP	8/10/03 11:27	100:29	8/10/03 14:44	3:17	1.060	94%	1248	1322										
4401196	9	1	D	Pass Edge	0" (STI)	DEEP	8/10/03 11:28	100:30	8/10/03 14:45	3:17	1.060	94%	1461	1548	978	184	19%							
4401197	9	2	A	Pass Center	0" (STI)	DEEP	8/10/03 11:35	100:27	8/10/03 14:51	3:16	1.059	94%	1106	1172										
4401198	9	2	B	Pass Edge	0" (STI)	DEEP	8/10/03 11:36	100:28	8/10/03 14:53	3:17	1.060	94%	1036	1098										
4401199	9	2	C	Pass Center	0" (STI)	DEEP	8/10/03 11:37	100:29	8/10/03 14:55	3:18	1.060	94%	770	816										
4401200	9	2	D	Pass Edge	0" (STI)	DEEP	8/10/03 11:38	100:30	8/10/03 14:57	3:19	1.060	94%	779	826										
4401201	9	3	A	Pass Center	0" (STI)	DEEP	8/10/03 11:44	100:27	8/10/03 14:59	3:15	1.059	94%	402	426										
4401202	9	3	B	Pass Edge	0" (STI)	DEEP	8/10/03 11:45	100:28	8/10/03 15:01	3:16	1.059	94%	472	500										
4401203	9	3	C	Pass Center	0" (STI)	DEEP	8/10/03 11:46	100:29	8/10/03 15:02	3:16	1.060	94%	1160	1229										
4401204	9	3	D	Pass Edge	0" (STI)	DEEP	8/10/03 11:47	100:30	8/10/03 15:04	3:17	1.060	94%	1114	1181										
4401205	9	4	A	Pass Center	0" (STI)	SHALLOW	8/10/03 11:56	100:27	8/10/03 15:09	3:13	1.058	94%	534	565	834	430	52%	1086	374	34%				
4401206	9	4	B	Pass Edge	0" (STI)	SHALLOW	8/10/03 11:57	100:28	8/10/03 15:11	3:14	1.059	94%	529	560										
4401207	9	4	C	Pass Center	0" (STI)	SHALLOW	8/10/03 11:58	100:29	8/10/03 15:13	3:15	1.059	94%	398	422										
4401208	9	4	D	Pass Edge	0" (STI)	SHALLOW	8/10/03 11:59	100:30	8/10/03 15:14	3:15	1.059	94%	518	549	524	68	13%							
4401209	9	5	A	Pass Center	0" (STI)	SHALLOW	8/10/03 12:08	100:27	8/10/03 15:18	3:10	1.058	95%	170	180										
4401210	9	5	B	Pass Edge	0" (STI)	SHALLOW	8/10/03 12:09	100:28	8/10/03 15:20	3:11	1.058	95%	70	74										
4401211	9	5	C	Pass Center	0" (STI)	SHALLOW	8/10/03 12:10	100:29	8/10/03 15:21	3:11	1.058	95%	658	696	446	375	84%							
4401212	9	5	D	Pass Edge	0" (STI)	SHALLOW	8/10/03 12:11	100:30	8/10/03 15:23	3:12	1.058	95%	787	832										
4401213	9	6	A	Pass Center	0" (STI)	SHALLOW	8/10/03 12:14	100:27	8/10/03 15:26	3:12	1.058	94%	1132	1198										
4401214	9	6	B	Pass Edge	0" (STI)	SHALLOW	8/10/03 12:15	100:28	8/10/03 15:28	3:13	1.059	94%	375	397										
4401215	9	6	C	Pass Center	0" (STI)	SHALLOW	8/10/03 12:16	100:29	8/10/03 15:30	3:14	1.059	94%	83	88										
4401216	9	6	D	Pass Edge	0" (STI)	SHALLOW	8/10/03 12:17	100:30	8/10/03 15:31	3:14	1.059	94%	37	39										

Table 2

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times					Sample MeBr Gas Conc (ppmv) <i>Unadjusted for Recovery</i>	Adjusted Sample Conc.	MeBr Gas Conc (ppmv) <i>Adjusted</i>													
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)	Recovery Correction Factor			Theoretical % Recovered	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)				
4401217	10	1	A	Pass Center	0" (STD)	DEEP	8/11/03 6:58	120:00	8/11/03 11:14	4:16	1.106	90%	1284	1420	1124	231	21%										
4401218	10	1	B	Pass Edge	0" (STD)	DEEP	8/11/03 6:59	120:01	8/11/03 11:15	4:16	1.107	90%	772	855													
4401219	10	1	C	Pass Center	0" (STD)	DEEP	8/11/03 7:00	120:02	8/11/03 11:17	4:17	1.107	90%	1007	1115													
4401220	10	1	D	Pass Edge	0" (STD)	DEEP	8/11/03 7:01	120:03	8/11/03 11:19	4:18	1.107	90%	999	1106	645	313	49%										
4401221	10	2	A	Pass Center	0" (STD)	DEEP	8/11/03 7:08	120:00	8/11/03 11:20	4:12	1.105	91%	852	942													
4401222	10	2	B	Pass Edge	0" (STD)	DEEP	8/11/03 7:09	120:01	8/11/03 11:23	4:14	1.106	90%	770	851													
4401223	10	2	C	Pass Center	0" (STD)	DEEP	8/11/03 7:10	120:02	8/11/03 11:25	4:15	1.106	90%	480	531	592	371	63%	787	376	48%							
4401224	10	2	D	Pass Edge	0" (STD)	DEEP	8/11/03 7:11	120:03	8/11/03 11:26	4:15	1.106	90%	232	256													
4401225	10	3	A	Pass Center	0" (STD)	DEEP	8/11/03 7:17	120:00	8/11/03 11:28	4:11	1.104	91%	247	273													
4401226	10	3	B	Pass Edge	0" (STD)	DEEP	8/11/03 7:18	120:01	8/11/03 11:29	4:11	1.104	91%	246	271	387	11	3%										
4401227	10	3	C	Pass Center	0" (STD)	DEEP	8/11/03 7:19	120:02	8/11/03 11:35	4:16	1.106	90%	854	945													
4401228	10	3	D	Pass Edge	0" (STD)	DEEP	8/11/03 7:20	120:03	8/11/03 11:36	4:16	1.107	90%	796	880													
4401229	10	4	A	Pass Center	0" (STD)	SHALLOW	8/11/03 7:29	120:00	8/11/03 11:38	4:09	1.103	91%	348	384	375	148	39%										
4401230	10	4	B	Pass Edge	0" (STD)	SHALLOW	8/11/03 7:30	120:01	8/11/03 11:39	4:09	1.103	91%	343	379													
4401231	10	4	C	Pass Center	0" (STD)	SHALLOW	8/11/03 7:31	120:02	8/11/03 11:41	4:10	1.104	91%	347	383													
4401232	10	4	D	Pass Edge	0" (STD)	SHALLOW	8/11/03 7:32	120:03	8/11/03 11:42	4:10	1.104	91%	365	403	434	190	44%	399	128	32%							
4401233	10	5	A	Pass Center	0" (STD)	SHALLOW	8/11/03 7:41	120:00	8/11/03 11:44	4:03	1.100	91%	382	420													
4401234	10	5	B	Pass Edge	0" (STD)	SHALLOW	8/11/03 7:42	120:01	8/11/03 11:45	4:03	1.101	91%	192	212													
4401235	10	5	C	Pass Center	0" (STD)	SHALLOW	8/11/03 7:43	120:02	8/11/03 11:46	4:03	1.101	91%	505	556	450	144	32%										
4401236	10	5	D	Pass Edge	0" (STD)	SHALLOW	8/11/03 7:44	120:03	8/11/03 11:48	4:04	1.101	91%	283	312													
4401237	10	6	A	Pass Center	0" (STD)	SHALLOW	8/11/03 7:47	120:00	8/11/03 11:51	4:04	1.101	91%	618	680													
4401238	10	6	B	Pass Edge	0" (STD)	SHALLOW	8/11/03 7:48	120:01	8/11/03 11:52	4:04	1.101	91%	441	486	347	96	28%										
4401239	10	6	C	Pass Center	0" (STD)	SHALLOW	8/11/03 7:49	120:02	8/11/03 11:54	4:05	1.101	91%	252	278													
4401240	10	6	D	Pass Edge	0" (STD)	SHALLOW	8/11/03 7:50	120:03	8/11/03 11:55	4:05	1.102	91%	265	292													

Table 3

Table 3 - SOIL GAS DATA ANALYSIS TABLE

Project #: TC440.2

Comparison of Methyl Bromide Gas Concentrations in the Tarp Soil Inter-space: Deep Broadcast Tarped vs. Shallow Broadcast Tarped Fumigation

Plot #	Application Date/Time:
Plot 1	8/6/03 8:19
Plot 2	8/6/03 8:32
Plot 3	8/6/03 8:37
Plot 4	8/6/03 8:49
Plot 5	8/6/03 8:58
Plot 6	8/6/03 9:05

Minimum ETA for Treatment Samples: 3:00

Average ETA for Treatment Samples: 8:48

Maximum ETA for Treatment Samples: 18:56

Syringe Sample Volume (ml): 15 mL

Syringe Sample Volume (ml): 15 mL							MeBr Gas Conc (ppmv) Adjusted																				
Sampling Location						Times																					
Sample No.	Interval	Plot #	Sample Rep	Position	Depth	Treatment	Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis	Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)				
4402001	1	1	A	Pass Center	0" (STI)	SHALLOW	8/6/03 10:05	1:46	8/6/03 21:12	11:07	1.165	86%	11841	13793													
4402002	1	1	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:06	1:47	8/6/03 21:20	11:14	1.167	86%	12201	14233													
4402003	1	1	C	Pass Center	0" (STI)	SHALLOW	8/6/03 10:08	1:49	8/6/03 21:22	11:14	1.167	86%	11023	12861													
4402004	1	1	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:09	1:50	8/6/03 21:24	11:15	1.167	86%	11829	13806	13673	579	4%										
4402005	1	2	A	Pass Center	0" (STI)	SHALLOW	8/6/03 10:22	1:50	8/6/03 21:27	11:05	1.164	86%	26721	31103													
4402006	1	2	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:23	1:51	8/6/03 21:28	11:05	1.164	86%	26224	30532													
4402007	1	2	C	Pass Center	0" (STI)	SHALLOW	8/6/03 10:25	1:53	8/6/03 21:35	11:10	1.165	86%	20303	23662													
4402008	1	2	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:26	1:54	8/6/03 21:37	11:11	1.166	86%	14116	16456	25438	6877	27%										
4402009	1	3	A	Pass Center	0" (STI)	SHALLOW	8/6/03 10:31	1:54	8/6/03 21:39	11:08	1.165	86%	21588	25149													
4402010	1	3	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:32	1:55	8/6/03 21:41	11:09	1.165	86%	23889	27836													
4402011	1	3	C	Pass Center	0" (STI)	SHALLOW	8/6/03 10:34	1:57	8/6/03 21:49	11:15	1.167	86%	23444	27359							22321	7410	33%				
4402012	1	3	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 10:35	1:58	8/6/03 21:51	11:16	1.167	86%	26332	30739	27771	2299	8%	22294	7480	34%	22267	8258	37%				
4402013	1	4	A	Pass Center	0" (STI)	DEEP	8/6/03 10:47	1:58	8/6/03 22:24	11:37	1.173	85%	2362	2771													
4402014	1	4	B	Pass Edge	0" (STI)	DEEP	8/6/03 10:48	1:59	8/6/03 22:26	11:38	1.174	85%	1609	1888													
4402015	1	4	C	Pass Center	0" (STI)	DEEP	8/6/03 10:50	2:01	8/6/03 22:27	11:37	1.174	85%	4635	5440													
4402016	1	4	D	Pass Edge	0" (STI)	DEEP	8/6/03 10:51	2:02	8/6/03 22:38	11:47	1.176	85%	3091	3636	3434	1516	44%										
4402017	1	5	A	Pass Center	0" (STI)	DEEP	8/6/03 11:00	2:02	8/6/03 22:42	11:42	1.175	85%	3895	4576													
4402018	1	5	B	Pass Edge	0" (STI)	DEEP	8/6/03 11:01	2:03	8/6/03 22:44	11:43	1.175	85%	3362	3951													
4402019	1	5	C	Pass Center	0" (STI)	DEEP	8/6/03 11:03	2:05	8/6/03 22:53	11:50	1.177	85%	13	16													
4402020	1	5	D	Pass Edge	0" (STI)	DEEP	8/6/03 11:04	2:06	8/6/03 22:57	11:53	1.178	85%	2160	2544	2772	2024	73%										

Table 3

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times							MeBr Gas Conc (ppmv) Adjusted							Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis	Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)			
4402021	1	6	A	Pass Center	0" (STI)	DEEP	8/6/03 11:11	2:06	8/6/03 23:02	11:51	1.178	85%	5493	6469	4969	1022	21%	3725	1719	46%	3468	1043	30%
4402022	1	6	B	Pass Edge	0" (STI)	DEEP	8/6/03 11:12	2:07	8/6/03 23:04	11:52	1.178	85%	3538	4167									
4402023	1	6	C	Pass Center	0" (STI)	DEEP	8/6/03 11:14	2:09	8/6/03 23:07	11:53	1.178	85%	3920	4618									
4402024	1	6	D	Pass Edge	0" (STI)	DEEP	8/6/03 11:15	2:10	8/6/03 23:09	11:54	1.178	85%	3924	4624									
4402025	2	1	A	Pass Center	0" (STI)	SHALLOW	8/6/03 11:49	3:30	8/7/03 2:57	15:08	1.375	73%	1764	2424	9622	4869	51%						
4402026	2	1	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 11:50	3:31	8/7/03 0:45	12:55	1.303	77%	10100	13165									
4402027	2	1	C	Pass Center	0" (STI)	SHALLOW	8/6/03 11:52	3:33	8/7/03 0:48	12:56	1.304	77%	8940	11656									
4402028	2	1	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 11:53	3:34	8/7/03 0:50	12:57	1.304	77%	8620	11243									
4402029	2	2	A	Pass Center	0" (STI)	SHALLOW	8/6/03 12:02	3:30	8/7/03 0:54	12:52	1.302	77%	17198	22389	21706	7143	33%						
4402030	2	2	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 12:03	3:31	8/7/03 0:58	12:55	1.303	77%	22636	29500									
4402031	2	2	C	Pass Center	0" (STI)	SHALLOW	8/6/03 12:05	3:33	8/7/03 1:00	12:55	1.303	77%	17457	22755									
4402032	2	2	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 12:06	3:34	8/7/03 1:02	12:56	1.304	77%	9340	12179									
4402033	2	3	A	Pass Center	0" (STI)	SHALLOW	8/6/03 12:07	3:30	8/7/03 1:05	12:58	1.305	77%	17955	23430	22905	1177	5%	18077	7747	43%	18408	7363	40%
4402034	2	3	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 12:08	3:31	8/7/03 1:07	12:59	1.305	77%	17753	23176									
4402035	2	3	C	Pass Center	0" (STI)	SHALLOW	8/6/03 12:10	3:33	8/7/03 1:15	13:05	1.308	76%	18214	23828									
4402036	2	3	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 12:11	3:34	8/7/03 1:17	13:06	1.309	76%	16184	21185									
4402037	2	4	A	Pass Center	0" (STI)	DEEP	8/6/03 12:19	3:30	8/7/03 2:59	14:40	1.359	74%	4767	6477	5383	2994	56%						
4402038	2	4	B	Pass Edge	0" (STI)	DEEP	8/6/03 12:20	3:31	8/7/03 3:01	14:41	1.360	74%	3990	5425									
4402039	2	4	C	Pass Center	0" (STI)	DEEP	8/6/03 12:22	3:33	8/7/03 3:03	14:41	1.360	74%	939	1276									
4402040	2	4	D	Pass Edge	0" (STI)	DEEP	8/6/03 12:23	3:34	8/7/03 3:05	14:42	1.360	74%	6144	8355									
4402041	2	5	A	Pass Center	0" (STI)	DEEP	8/6/03 12:27	3:29	8/7/03 3:06	14:39	1.359	74%	5063	6880	6986	1177	17%						
4402042	2	5	B	Pass Edge	0" (STI)	DEEP	8/6/03 12:28	3:30	8/7/03 3:09	14:41	1.359	74%	4790	6512									
4402043	2	5	C	Pass Center	0" (STI)	DEEP	8/6/03 12:30	3:32	8/7/03 3:11	14:41	1.359	74%	4346	5908									
4402044	2	5	D	Pass Edge	0" (STI)	DEEP	8/6/03 12:31	3:33	8/7/03 3:13	14:42	1.360	74%	6357	8645									
4402045	2	6	A	Pass Center	0" (STI)	DEEP	8/6/03 12:34	3:29	8/7/03 3:18	14:44	1.362	73%	9677	13175	8956	2967	33%	7108	2748	39%	7220	1338	19%
4402046	2	6	B	Pass Edge	0" (STI)	DEEP	8/6/03 12:35	3:30	8/7/03 3:21	14:46	1.362	73%	4563	6216									
4402047	2	6	C	Pass Center	0" (STI)	DEEP	8/6/03 12:37	3:32	8/7/03 3:23	14:46	1.362	73%	6068	8266									
4402048	2	6	D	Pass Edge	0" (STI)	DEEP	8/6/03 12:38	3:33	8/7/03 3:25	14:47	1.363	73%	5992	8165									

Table 3

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times							MeBr Gas Conc (ppmv) Adjusted									
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis	Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)
4402049	3	1	A	Pass Center	0" (STI)	SHALLOW	8/6/03 18:26	10:07	8/7/03 13:13	18:47	1.225	82%	3814	4671									
4402050	3	1	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 18:27	10:08	8/7/03 13:15	18:48	1.225	82%	4852	5944									
4402051	3	1	C	Pass Center	0" (STI)	SHALLOW	8/6/03 18:28	10:09	8/7/03 13:19	18:51	1.226	82%	5105	6256									
4402052	3	1	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 18:29	10:10	8/7/03 13:22	18:53	1.226	82%	4830	5922	5698	702	12%						
4402053	3	2	A	Pass Center	0" (STI)	SHALLOW	8/6/03 18:39	10:07	8/7/03 13:23	18:44	1.224	82%	12012	14702									
4402054	3	2	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 18:40	10:08	8/7/03 13:25	18:45	1.224	82%	13506	16533									
4402055	3	2	C	Pass Center	0" (STI)	SHALLOW	8/6/03 18:41	10:09	8/7/03 13:26	18:45	1.224	82%	7165	8772									
4402056	3	2	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 18:42	10:10	8/7/03 13:28	18:46	1.225	82%	6521	7985	11998	4258	35%						
4402057	3	3	A	Pass Center	0" (STI)	SHALLOW	8/6/03 18:44	10:07	8/7/03 13:31	18:47	1.225	82%	12109	14830									
4402058	3	3	B	Pass Edge	0" (STI)	SHALLOW	8/6/03 18:45	10:08	8/7/03 13:34	18:49	1.225	82%	12005	14708									
4402059	3	3	C	Pass Center	0" (STI)	SHALLOW	8/6/03 18:46	10:09	8/7/03 13:35	18:49	1.225	82%	12380	15169							10733	4751	44%
4402060	3	3	D	Pass Edge	0" (STI)	SHALLOW	8/6/03 18:47	10:10	8/7/03 13:43	18:56	1.227	82%	13300	16319	15256	735	5%	10984	4733	43%	11235	5153	46%
4402061	3	4	A	Pass Center	0" (STI)	DEEP	8/6/03 18:56	10:07	8/7/03 13:47	18:51	1.226	82%	8312	10189									
4402062	3	4	B	Pass Edge	0" (STI)	DEEP	8/6/03 18:57	10:08	8/7/03 13:49	18:52	1.226	82%	6586	8074									
4402063	3	4	C	Pass Center	0" (STI)	DEEP	8/6/03 18:58	10:09	8/7/03 13:50	18:52	1.226	82%	8111	9945									
4402064	3	4	D	Pass Edge	0" (STI)	DEEP	8/6/03 18:59	10:10	8/7/03 13:52	18:53	1.226	82%	7951	9749	9489	961	10%						
4402065	3	5	A	Pass Center	0" (STI)	DEEP	8/6/03 19:05	10:07	8/7/03 13:53	18:48	1.225	82%	6051	7412									
4402066	3	5	B	Pass Edge	0" (STI)	DEEP	8/6/03 19:06	10:08	8/7/03 13:55	18:49	1.225	82%	5605	6867									
4402067	3	5	C	Pass Center	0" (STI)	DEEP	8/6/03 19:07	10:09	8/7/03 13:56	18:49	1.225	82%	5684	6964									
4402068	3	5	D	Pass Edge	0" (STI)	DEEP	8/6/03 19:08	10:10	8/7/03 13:58	18:50	1.225	82%	5061	6202	6861	500	7%						
4402069	3	6	A	Pass Center	0" (STI)	DEEP	8/6/03 19:12	10:07	8/7/03 14:02	18:50	1.225	82%	10152	12441									
4402070	3	6	B	Pass Edge	0" (STI)	DEEP	8/6/03 19:13	10:08	8/7/03 14:04	18:51	1.226	82%	8593	10532									
4402071	3	6	C	Pass Center	0" (STI)	DEEP	8/6/03 19:14	10:09	8/7/03 14:05	18:51	1.226	82%	10823	13266							10036	2552	25%
4402072	3	6	D	Pass Edge	0" (STI)	DEEP	8/6/03 19:15	10:10	8/7/03 14:08	18:53	1.226	82%	6710	8228	11117	2241	20%	9156	2246	25%	8275	1649	20%

Table 3

Sampling Location						Times							MeBr Gas Conc (ppmv) Adjusted										
Sample No.	Interval	Plot #	Sample Rep	Position	Depth	Treatment	Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis	Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)
4402073	4	1	A	Pass Center	0" (STI)	SHALLOW	8/7/03 0:19	16:00	8/7/03 10:26	10:07	1.094	91%	3496	3824	4306	548	13%						
4402074	4	1	B	Pass Edge	0" (STI)	SHALLOW	8/7/03 0:20	16:01	8/7/03 10:28	10:08	1.094	91%	3558	3893									
4402075	4	1	C	Pass Center	0" (STI)	SHALLOW	8/7/03 0:22	16:03	8/7/03 10:30	10:08	1.094	91%	4139	4529									
4402076	4	1	D	Pass Edge	0" (STI)	SHALLOW	8/7/03 0:23	16:04	8/7/03 10:32	10:09	1.094	91%	4548	4977									
4402077	4	2	A	Pass Center	0" (STI)	SHALLOW	8/7/03 0:28	15:56	8/7/03 14:38	14:10	1.137	88%	9681	11004	8145	3832	47%						
4402078	4	2	B	Pass Edge	0" (STI)	SHALLOW	8/7/03 0:29	15:57	8/7/03 14:40	14:11	1.137	88%	10389	11811									
4402079	4	2	C	Pass Center	0" (STI)	SHALLOW	8/7/03 0:28	15:56	8/7/03 14:41	14:13	1.137	88%	3625	4123									
4402080	4	2	D	Pass Edge	0" (STI)	SHALLOW	8/7/03 0:29	15:57	8/7/03 14:43	14:14	1.137	88%	4962	5643									
4402081	4	3	A	Pass Center	0" (STI)	SHALLOW	8/7/03 0:33	15:56	8/7/03 14:45	14:12	1.137	88%	7918	9003	8922	1340	15%	7124	3003	42%	7210	3068	43%
4402082	4	3	B	Pass Edge	0" (STI)	SHALLOW	8/7/03 0:34	15:57	8/7/03 14:52	14:18	1.138	88%	8724	9930									
4402083	4	3	C	Pass Center	0" (STI)	SHALLOW	8/7/03 0:33	15:56	8/7/03 14:54	14:21	1.139	88%	8563	9750									
4402084	4	3	D	Pass Edge	0" (STI)	SHALLOW	8/7/03 0:34	15:57	8/7/03 14:55	14:21	1.139	88%	6152	7005									
4402085	4	4	A	Pass Center	0" (STI)	DEEP	8/7/03 0:45	15:56	8/7/03 14:57	14:12	1.137	88%	4742	5392	6850	1379	20%						
4402086	4	4	B	Pass Edge	0" (STI)	DEEP	8/7/03 0:46	15:57	8/7/03 15:05	14:19	1.138	88%	5496	6255									
4402087	4	4	C	Pass Center	0" (STI)	DEEP	8/7/03 0:45	15:56	8/7/03 15:06	14:21	1.139	88%	7575	8625									
4402088	4	4	D	Pass Edge	0" (STI)	DEEP	8/7/03 0:46	15:57	8/7/03 15:07	14:21	1.139	88%	6258	7126									
4402089	4	5	A	Pass Center	0" (STI)	DEEP	8/7/03 0:50	15:52	8/7/03 15:09	14:19	1.138	88%	6044	6880	6276	492	8%						
4402090	4	5	B	Pass Edge	0" (STI)	DEEP	8/7/03 0:51	15:53	8/7/03 15:11	14:20	1.138	88%	5296	6029									
4402091	4	5	C	Pass Center	0" (STI)	DEEP	8/7/03 0:50	15:52	8/7/03 15:13	14:23	1.139	88%	5653	6439									
4402092	4	5	D	Pass Edge	0" (STI)	DEEP	8/7/03 0:51	15:53	8/7/03 15:17	14:26	1.140	88%	5049	5754									
4402093	4	6	A	Pass Center	0" (STI)	DEEP	8/7/03 0:56	15:51	8/7/03 15:22	14:26	1.140	88%	6711	7649	8491	1399	16%	7205	1442	20%	7310	1814	25%
4402094	4	6	B	Pass Edge	0" (STI)	DEEP	8/7/03 0:57	15:52	8/7/03 15:24	14:27	1.140	88%	7140	8138									
4402095	4	6	C	Pass Center	0" (STI)	DEEP	8/7/03 0:56	15:51	8/7/03 15:26	14:30	1.140	88%	6682	7620									
4402096	4	6	D	Pass Edge	0" (STI)	DEEP	8/7/03 0:57	15:52	8/7/03 15:28	14:31	1.140	88%	9259	10559									

Table 3

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times						Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	MeBr Gas Conc (ppmv) Adjusted								
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis	Recovery Correction Factor	Theoretical % Recovered			Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)
4402121	6	1	A	Pass Center	0" (STI)	SHALLOW	8/7/03 17:19	33:00	8/7/03 23:31	6:12	1.104	91%	1255	1386									
4402122	6	1	B	Pass Edge	0" (STI)	SHALLOW	8/7/03 17:20	33:01	8/7/03 23:33	6:13	1.105	91%	1719	1899									
4402123	6	1	C	Pass Center	0" (STI)	SHALLOW	8/7/03 17:21	33:02	8/7/03 23:35	6:14	1.105	91%	1928	2130									
4402124	6	1	D	Pass Edge	0" (STI)	SHALLOW	8/7/03 17:22	33:03	8/7/03 23:37	6:15	1.105	90%	1993	2203	1904	369	19%						
4402125	6	2	A	Pass Center	0" (STI)	SHALLOW	8/7/03 17:32	33:00	8/7/03 23:39	6:07	1.103	91%	3989	4399									
4402126	6	2	B	Pass Edge	0" (STI)	SHALLOW	8/7/03 17:33	33:01	8/7/03 23:40	6:07	1.103	91%	3887	4288									
4402127	6	2	C	Pass Center	0" (STI)	SHALLOW	8/7/03 17:34	33:02	8/7/03 23:42	6:08	1.103	91%	2255	2487									
4402128	6	2	D	Pass Edge	0" (STI)	SHALLOW	8/7/03 17:35	33:03	8/7/03 23:44	6:09	1.103	91%	1964	2166	3335	1173	35%						
4402129	6	3	A	Pass Center	0" (STI)	SHALLOW	8/7/03 17:37	33:00	8/7/03 23:45	6:08	1.103	91%	3295	3634									
4402130	6	3	B	Pass Edge	0" (STI)	SHALLOW	8/7/03 17:38	33:01	8/7/03 23:48	6:10	1.104	91%	3638	4015							2865	1086	38%
4402131	6	3	C	Pass Center	0" (STI)	SHALLOW	8/7/03 17:39	33:02	8/7/03 23:50	6:11	1.104	91%	2856	3152							3045	1069	35%
4402132	6	3	D	Pass Edge	0" (STI)	SHALLOW	8/7/03 17:40	33:03	8/7/03 23:52	6:12	1.104	91%	3352	3702	3626	357	10%	2955	1032	35%			
4402133	6	4	A	Pass Center	0" (STI)	DEEP	8/7/03 17:49	33:00	8/7/03 23:57	6:08	1.103	91%	3845	4242									
4402134	6	4	B	Pass Edge	0" (STI)	DEEP	8/7/03 17:50	33:01	8/7/03 23:59	6:09	1.103	91%	4455	4915									
4402135	6	4	C	Pass Center	0" (STI)	DEEP	8/7/03 17:51	33:02	8/8/03 0:06	6:15	1.105	90%	3840	4244									
4402136	6	4	D	Pass Edge	0" (STI)	DEEP	8/7/03 17:52	33:03	8/8/03 0:08	6:16	1.105	90%	4431	4898	4575	383	8%						
4402137	6	5	A	Pass Center	0" (STI)	DEEP	8/7/03 17:58	33:00	8/8/03 0:11	6:13	1.105	91%	3298	3643									
4402138	6	5	B	Pass Edge	0" (STI)	DEEP	8/7/03 17:59	33:01	8/8/03 0:13	6:14	1.105	91%	3601	3979									
4402139	6	5	C	Pass Center	0" (STI)	DEEP	8/7/03 18:00	33:02	8/8/03 0:14	6:14	1.105	90%	3515	3884									
4402140	6	5	D	Pass Edge	0" (STI)	DEEP	8/7/03 18:01	33:03	8/8/03 0:16	6:15	1.105	90%	2821	3118	3656	386	11%						
4402141	6	6	A	Pass Center	0" (STI)	DEEP	8/7/03 18:05	33:00	8/8/03 0:18	6:13	1.105	91%	3836	4237									
4402142	6	6	B	Pass Edge	0" (STI)	DEEP	8/7/03 18:06	33:01	8/8/03 0:19	6:13	1.105	91%	3825	4225									
4402143	6	6	C	Pass Center	0" (STI)	DEEP	8/7/03 18:07	33:02	8/8/03 0:21	6:14	1.105	91%	3868	4274							4087	262	6%
4402144	6	6	D	Pass Edge	0" (STI)	DEEP	8/7/03 18:08	33:03	8/8/03 0:23	6:15	1.105	90%	5105	5642	4595	699	15%	4275	650	15%	4463	881	20%

Table 3

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times							MeBr Gas Conc (ppmv) Adjusted									
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis	Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)
4402145	7	1	A	Pass Center	0" (STI)	SHALLOW	8/8/03 12:46	52:27	8/8/03 17:20	4:34	1.112	90%	1064	1183									
4402146	7	1	B	Pass Edge	0" (STI)	SHALLOW	8/8/03 12:47	52:28	8/8/03 17:23	4:36	1.113	90%	1210	1347									
4402147	7	1	C	Pass Center	0" (STI)	SHALLOW	8/8/03 12:48	52:29	8/8/03 17:24	4:36	1.113	90%	1269	1413									
4402148	7	1	D	Pass Edge	0" (STI)	SHALLOW	8/8/03 12:49	52:30	8/8/03 17:26	4:37	1.113	90%	1146	1276	1305	98	8%						
4402149	7	2	A	Pass Center	0" (STI)	SHALLOW	8/8/03 12:59	52:27	8/8/03 17:27	4:28	1.109	90%	2282	2532									
4402150	7	2	B	Pass Edge	0" (STI)	SHALLOW	8/8/03 13:00	52:28	8/8/03 17:29	4:29	1.110	90%	2464	2734									
4402151	7	2	C	Pass Center	0" (STI)	SHALLOW	8/8/03 13:01	52:29	8/8/03 17:33	4:32	1.111	90%	1350	1500									
4402152	7	2	D	Pass Edge	0" (STI)	SHALLOW	8/8/03 13:02	52:30	8/8/03 17:36	4:34	1.112	90%	1227	1364	2032	700	34%						
4402153	7	3	A	Pass Center	0" (STI)	SHALLOW	8/8/03 13:04	52:27	8/8/03 17:38	4:34	1.112	90%	2037	2265									
4402154	7	3	B	Pass Edge	0" (STI)	SHALLOW	8/8/03 13:05	52:28	8/8/03 17:39	4:34	1.112	90%	2227	2477									
4402155	7	3	C	Pass Center	0" (STI)	SHALLOW	8/8/03 13:06	52:29	8/8/03 17:41	4:35	1.113	90%	1608	1789							1780	524	29%
4402156	7	3	D	Pass Edge	0" (STI)	SHALLOW	8/8/03 13:07	52:30	8/8/03 17:43	4:36	1.113	90%	1921	2138	2167	289	13%	1835	562	31%	1889	643	34%
4402157	7	4	A	Pass Center	0" (STI)	DEEP	8/8/03 13:16	52:27	8/8/03 17:45	4:29	1.110	90%	2921	3243									
4402158	7	4	B	Pass Edge	0" (STI)	DEEP	8/8/03 13:17	52:28	8/8/03 17:47	4:30	1.110	90%	2881	3199									
4402159	7	4	C	Pass Center	0" (STI)	DEEP	8/8/03 13:18	52:29	8/8/03 17:49	4:31	1.111	90%	2472	2745									
4402160	7	4	D	Pass Edge	0" (STI)	DEEP	8/8/03 13:19	52:30	8/8/03 17:50	4:31	1.111	90%	2705	3005	3048	227	7%						
4402161	7	5	A	Pass Center	0" (STI)	DEEP	8/8/03 13:25	52:27	8/8/03 17:55	4:30	1.110	90%	2429	2697									
4402162	7	5	B	Pass Edge	0" (STI)	DEEP	8/8/03 13:26	52:28	8/8/03 17:56	4:30	1.110	90%	2449	2719									
4402163	7	5	C	Pass Center	0" (STI)	DEEP	8/8/03 13:27	52:29	8/8/03 17:58	4:31	1.111	90%	1696	1883									
4402164	7	5	D	Pass Edge	0" (STI)	DEEP	8/8/03 13:28	52:30	8/8/03 17:59	4:31	1.111	90%	1741	1934	2308	462	20%						
4402165	7	6	A	Pass Center	0" (STI)	DEEP	8/8/03 13:32	52:27	8/8/03 18:00	4:28	1.110	90%	2428	2694									
4402166	7	6	B	Pass Edge	0" (STI)	DEEP	8/8/03 13:33	52:28	8/8/03 18:02	4:29	1.110	90%	2897	3215									
4402167	7	6	C	Pass Center	0" (STI)	DEEP	8/8/03 13:34	52:29	8/8/03 18:07	4:33	1.112	90%	2202	2448							2618	444	17%
4402168	7	6	D	Pass Edge	0" (STI)	DEEP	8/8/03 13:35	52:30	8/8/03 18:11	4:36	1.113	90%	3609	4016	3093	693	22%	2816	587	21%	3015	683	23%

Table 3

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times							MeBr Gas Conc (ppmv) Adjusted									
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis	Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)
4402169	8	1	A	Pass Center	0" (STI)	SHALLOW	8/9/03 12:46	76:27	8/9/03 15:57	3:11	1.070	93%	690	738	722	24	3%						
4402170	8	1	B	Pass Edge	0" (STI)	SHALLOW	8/9/03 12:47	76:28	8/9/03 15:59	3:12	1.070	93%	696	745									
4402171	8	1	C	Pass Center	0" (STI)	SHALLOW	8/9/03 12:48	76:29	8/9/03 16:00	3:12	1.070	93%	647	692									
4402172	8	1	D	Pass Edge	0" (STI)	SHALLOW	8/9/03 12:49	76:30	8/9/03 16:02	3:13	1.071	93%	667	714									
4402173	8	2	A	Pass Center	0" (STI)	SHALLOW	8/9/03 12:59	76:27	8/9/03 16:03	3:04	1.067	94%	1227	1309	1093	333	30%						
4402174	8	2	B	Pass Edge	0" (STI)	SHALLOW	8/9/03 13:00	76:28	8/9/03 16:05	3:05	1.068	94%	1352	1443									
4402175	8	2	C	Pass Center	0" (STI)	SHALLOW	8/9/03 13:01	76:29	8/9/03 16:08	3:07	1.069	94%	788	842									
4402176	8	2	D	Pass Edge	0" (STI)	SHALLOW	8/9/03 13:02	76:30	8/9/03 16:10	3:08	1.069	94%	727	777									
4402177	8	3	A	Pass Center	0" (STI)	SHALLOW	8/9/03 13:04	76:27	8/9/03 16:11	3:07	1.069	94%	1125	1202	1145	180	16%	987	279	28%	955	251	26%
4402178	8	3	B	Pass Edge	0" (STI)	SHALLOW	8/9/03 13:05	76:28	8/9/03 16:13	3:08	1.069	94%	1276	1364									
4402179	8	3	C	Pass Center	0" (STI)	SHALLOW	8/9/03 13:06	76:29	8/9/03 16:15	3:09	1.069	94%	883	944									
4402180	8	3	D	Pass Edge	0" (STI)	SHALLOW	8/9/03 13:07	76:30	8/9/03 16:16	3:09	1.069	94%	1000	1070									
4402181	8	4	A	Pass Center	0" (STI)	DEEP	8/9/03 13:16	76:27	8/9/03 16:17	3:01	1.066	94%	1789	1907	1880	147	8%						
4402182	8	4	B	Pass Edge	0" (STI)	DEEP	8/9/03 13:17	76:28	8/9/03 16:19	3:02	1.066	94%	1912	2039									
4402183	8	4	C	Pass Center	0" (STI)	DEEP	8/9/03 13:18	76:29	8/9/03 16:20	3:02	1.067	94%	1578	1683									
4402184	8	4	D	Pass Edge	0" (STI)	DEEP	8/9/03 13:19	76:30	8/9/03 16:22	3:03	1.067	94%	1772	1890									
4402185	8	5	A	Pass Center	0" (STI)	DEEP	8/9/03 13:25	76:27	8/9/03 16:25	3:00	1.066	94%	1605	1711	1527	245	16%						
4402186	8	5	B	Pass Edge	0" (STI)	DEEP	8/9/03 13:26	76:28	8/9/03 16:27	3:01	1.066	94%	1564	1667									
4402187	8	5	C	Pass Center	0" (STI)	DEEP	8/9/03 13:27	76:29	8/9/03 16:29	3:02	1.067	94%	1461	1559									
4402188	8	5	D	Pass Edge	0" (STI)	DEEP	8/9/03 13:28	76:30	8/9/03 16:31	3:03	1.067	94%	1099	1173									
4402189	8	6	A	Pass Center	0" (STI)	DEEP	8/9/03 13:32	76:27	8/9/03 16:32	3:00	1.066	94%	1310	1396	1705	334	20%	1704	274	16%	1622	184	11%
4402190	8	6	B	Pass Edge	0" (STI)	DEEP	8/9/03 13:33	76:28	8/9/03 16:34	3:01	1.066	94%	1716	1829									
4402191	8	6	C	Pass Center	0" (STI)	DEEP	8/9/03 13:34	76:29	8/9/03 16:35	3:01	1.066	94%	1394	1476									
4402192	8	6	D	Pass Edge	0" (STI)	DEEP	8/9/03 13:35	76:30	8/9/03 16:37	3:02	1.066	94%	1987	2119									

Table 3

Sample No.	Interval	Plot #	Sampling Location			Treatment	Times							MeBr Gas Conc (ppmv) Adjusted									
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis	Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)	Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)
4402193	9	1	A	Pass Center	0" (STI)	SHALLOW	8/10/03 12:46	100:27	8/10/03 16:07	3:21	1.061	94%	421	447	471	69	15%						
4402194	9	1	B	Pass Edge	0" (STI)	SHALLOW	8/10/03 12:47	100:28	8/10/03 16:09	3:22	1.061	94%	426	452									
4402195	9	1	C	Pass Center	0" (STI)	SHALLOW	8/10/03 12:48	100:29	8/10/03 16:11	3:23	1.062	94%	538	571									
4402196	9	1	D	Pass Edge	0" (STI)	SHALLOW	8/10/03 12:49	100:30	8/10/03 16:12	3:23	1.062	94%	390	414									
4402197	9	2	A	Pass Center	0" (STI)	SHALLOW	8/10/03 12:59	100:27	8/10/03 16:14	3:15	1.059	94%	710	752	637	200	31%						
4402198	9	2	B	Pass Edge	0" (STI)	SHALLOW	8/10/03 13:00	100:28	8/10/03 16:15	3:15	1.059	94%	812	860									
4402199	9	2	C	Pass Center	0" (STI)	SHALLOW	8/10/03 13:01	100:29	8/10/03 16:17	3:16	1.060	94%	445	471									
4402200	9	2	D	Pass Edge	0" (STI)	SHALLOW	8/10/03 13:02	100:30	8/10/03 16:19	3:17	1.060	94%	438	464									
4402201	9	3	A	Pass Center	0" (STI)	SHALLOW	8/10/03 13:04	100:27	8/10/03 16:20	3:16	1.060	94%	646	685	668	94	14%	592	151	25%	597	190	32%
4402202	9	3	B	Pass Edge	0" (STI)	SHALLOW	8/10/03 13:05	100:28	8/10/03 16:22	3:17	1.060	94%	750	795									
4402203	9	3	C	Pass Center	0" (STI)	SHALLOW	8/10/03 13:06	100:29	8/10/03 16:25	3:19	1.060	94%	561	595									
4402204	9	3	D	Pass Edge	0" (STI)	SHALLOW	8/10/03 13:07	100:30	8/10/03 16:27	3:20	1.061	94%	564	598									
4402205	9	4	A	Pass Center	0" (STI)	DEEP	8/10/03 13:16	100:27	8/10/03 16:28	3:12	1.058	94%	1268	1342	1263	69	5%						
4402206	9	4	B	Pass Edge	0" (STI)	DEEP	8/10/03 13:17	100:28	8/10/03 16:30	3:13	1.058	94%	1224	1296									
4402207	9	4	C	Pass Center	0" (STI)	DEEP	8/10/03 13:18	100:29	8/10/03 16:31	3:13	1.059	94%	1159	1227									
4402208	9	4	D	Pass Edge	0" (STI)	DEEP	8/10/03 13:19	100:30	8/10/03 16:33	3:14	1.059	94%	1123	1189									
4402209	9	5	A	Pass Center	0" (STI)	DEEP	8/10/03 13:25	100:27	8/10/03 16:34	3:09	1.057	95%	1022	1081	1032	77	7%						
4402210	9	5	B	Pass Edge	0" (STI)	DEEP	8/10/03 13:26	100:28	8/10/03 16:36	3:10	1.058	95%	1018	1076									
4402211	9	5	C	Pass Center	0" (STI)	DEEP	8/10/03 13:27	100:29	8/10/03 16:38	3:11	1.058	95%	995	1053									
4402212	9	5	D	Pass Edge	0" (STI)	DEEP	8/10/03 13:28	100:30	8/10/03 16:40	3:12	1.058	95%	868	919									
4402213	9	6	A	Pass Center	0" (STI)	DEEP	8/10/03 13:32	100:27	8/10/03 16:43	3:11	1.058	95%	1184	1253	1003	373	37%	1099	236	21%	1129	141	12%
4402214	9	6	B	Pass Edge	0" (STI)	DEEP	8/10/03 13:33	100:28	8/10/03 16:44	3:11	1.058	95%	990	1048									
4402215	9	6	C	Pass Center	0" (STI)	DEEP	8/10/03 13:34	100:29	8/10/03 16:46	3:12	1.058	95%	437	462									
4402216	9	6	D	Pass Edge	0" (STI)	DEEP	8/10/03 13:35	100:30	8/10/03 16:48	3:13	1.058	94%	1179	1248									

Table 3

Sample No	Interval	Plot #	Sampling Location			Treatment	Times						MeBr Gas Conc (ppmv) Adjusted									Sampling Position Interval Average	Sampling Position Interval Std Dev.	Sampling Position Interval CV (%SD)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
			Sample Rep	Position	Depth		Time of Collection	Elapsed Time from Application	Date-Time of Analysis	Elapsed Time from Collection to Analysis	Recovery Correction Factor	Theoretical % Recovered	Sample MeBr Gas Conc (ppmv) Unadjusted for Recovery	Adjusted Sample Conc.	Treatment Plot Replicate Interval Average	Treatment Plot Replicate Interval Std Dev.	Treatment Plot Replicate Interval CV (%SD)	Treatment Interval Average	Treatment Interval Std Dev.	Treatment Interval CV (%SD)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
4402217	10	1	A	Pass Center	0" (STI)	SHALLOW	8/11/03 8:19	120:00	8/11/03 12:36	4:17	1.107	90%	263	291																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

Table 4

Table 4 - TC440.1 and TC440.2 (after Interval 3) Quality Control and Sample Recovery of Methyl Bromide Gas Samples

Project #: TC440.1 and TC440.2

Comparison of Methyl Bromide Gas Concentrations in the Tarp Soil Inter-space: Deep Broadcast Tarped vs. Shallow Broadcast Tarped Fumigation

Minimum ETA for Treatment Samples: 3:10

Average ETA for Treatment Samples: 6:44

Maximum ETA for Treatment Samples: 13:40

1.063511562

Syringe Sample Volume (ml): 15 mL

Maximum ETA for Treatment Samples: 15:40																					
Sample No.	Sort Code	Interval	Sample Rep	Std Cyl. No.	Std. Concentration (ppmv)	Date-Time of Collection	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)	Peak Area	Back Calculated Conc. (ppmv)	Average Peak Area for ETA	Peak Area for ETA Std Dev.	Peak Area for ETA % Std Dev. (CV)	ETA Average % Recovery for Samples	Sampling Interval Average % Recovery for Samples	Regression Estimated Sampling Interval % Recovery for Samples	Regression Estimated 24 Hour % Recovery	Linear Regression Analysis of Sample Recovery			
4401501	1	1	a	SC31	30500	8/6/03 7:15	8/6/03 12:15	5:00	6370	28710	6296	74	1.2%	95%		95%	81%	m = -1239.5	6603.03 = b		
4401502	2	1	b	SC31	30500	8/6/03 7:15	8/6/03 12:19	5:04	6297	28381								se _m = 272.103	51.8304 = se _b		
4401503	3	1	c	SC31	30500	8/6/03 7:15	8/6/03 12:21	5:06	6222	28040								r ² = 0.65353	140.025 = se _Y		
4401504	8	1	d	SC31	30500	8/6/03 8:30	8/6/03 16:31	8:01	6070	27349								F = 20.7489	11 = df		
4401505	9	1	e	SC31	30500	8/6/03 8:30	8/6/03 16:33	8:03	6395	28823								as reg = 406822	215676 = as resid		
4401506	10	1	f	SC31	30500	8/6/03 8:30	8/6/03 16:35	8:05	6182	27860	6215	165	2.7%	94%	95%						
Std.	4	1	Std Rep	SC14	30500	8/6/03 12:24	8/6/03 12:24	0:00	6575	29639	6610	154	2.3%								
Std.	5	1	Std Rep	SC14	30500	8/6/03 11:07	8/6/03 11:07	0:00	6748	31136											
Std.	6	1	Std Rep	SC14	30500	8/6/03 11:10	8/6/03 11:10	0:00	6782	31362											
Std.	7	1	Std Rep	SC14	30500	8/6/03 11:15	8/6/03 11:15	0:00	6763	31318											
Std.	11	1	Std Rep	SC14	30500	8/6/03 15:55	8/6/03 15:55	0:00	6438	29021											
Std.	12	1	Std Rep	SC14	30500	8/6/03 16:38	8/6/03 16:38	0:00	6540	29482											
Std.	13	1	Std Rep	SC14	30500	8/6/03 17:18	8/6/03 17:18	0:00	6426	28964											
4401507	14	2	a	SC31	30500	8/6/03 9:50	8/6/03 17:10	7:20	5798	26117	6046	222	3.7%	94%		93%	80%	m = -1299.7	6461.49 = b		
4401508	15	2	b	SC31	30500	8/6/03 9:50	8/6/03 17:13	7:23	6224	28048								se _m = 258.116	62.093 = se _b		
4401509	16	2	c	SC31	30500	8/6/03 9:50	8/6/03 17:15	7:25	6118	27568								r ² = 0.73803	139.085 = se _Y		
4401510	19	2	d	SC31	30500	8/6/03 11:10	8/6/03 19:21	8:11	6093	27457								F = 25.3555	9 = df		
4401511	20	2	e	SC31	30500	8/6/03 11:10	8/6/03 19:23	8:13	6097	27475								as reg = 490496	174103 = as resid		
4401512	21	2	f	SC31	30500	8/6/03 11:10	8/6/03 19:25	8:15	5897	26566	6029	115	1.9%	93%	93%						
Std.	17	2	Std Rep	SC14	30500	8/6/03 16:38	8/6/03 16:38	0:00	6540	29482	6463	109	1.7%								
Std.	18	2	Std Rep	SC14	30500	8/6/03 17:18	8/6/03 17:18	0:00	6426	28964											
Std.	22	2	Std Rep	SC14	30500	8/6/03 19:28	8/6/03 19:28	0:00	6318	28475											
Std.	23	2	Std Rep	SC14	30500	8/6/03 20:48	8/6/03 20:48	0:00	6431	28990											
Std.	24	2	Std Rep	SC14	30500	8/6/03 21:10	8/6/03 21:10	0:00	6598	30477											

Table 4

Table 4 - TC440.1 and TC440.2 (after Interval 3) Quality Control and Sample Recovery of Methyl Bromide Gas Samples

Project #: TC440.1 and TC440.2

Comparison of Methyl Bromide Gas Concentrations in the Tarp Soil Inter-space: Deep Broadcast Tarped vs. Shallow Broadcast Tarped Fumigation

Minimum ETA for Treatment Samples: 3:10

Average ETA for Treatment Samples: 6:44

Maximum ETA for Treatment Samples: 13:40

Syringe Sample Volume (ml): 15 mL

1.063511562

Maximum ETA for Treatment Samples: 13:40																				
Sample No.	Sort Code	Interval	Sample Rep	Std Cyl. No.	Concentration (ppmv)	Date-Time of Collection	Date-Time of Analysis	Elapsed Time from Collection to Analysis (ETA)	Peak Area	Back Calculated Conc. (ppmv)	Average Peak Area for ETA	Peak Area for ETA Std Dev.	Peak Area for ETA % Std Dev. (CV)	ETA Average % Recovery for Samples	Sampling Interval Average % Recovery for Samples	Regression Estimated Sampling Interval % Recovery for Samples	Regression Estimated 24 Hour % Recovery	Linear Regression Analysis of Sample Recovery		
4401513	50	3	a	SC31	30500	8/6/03 15:51	8/7/03 3:54	12:03	3761	16427	4860	1085	22%	73%				m = -2995.6	6630.37 = b	
4401514	51	3	b	SC31	30500	8/6/03 15:51	8/7/03 3:56	12:05	4886	21825								se _m = 803.87	310.689 = se _b	
4401515	52	3	c	SC31	30500	8/6/03 15:51	8/7/03 3:57	12:06	5932	27050								r ² = 0.60676	695.298 = se _Y	
4401516	57	3	d	SC31	30500	8/6/03 16:58	8/7/03 5:57	12:59	5140	23081	5248	869	17%	79%	76%		76%	F = 13.8865	9 = df	
4401517	58	3	e	SC31	30500	8/6/03 16:58	8/7/03 5:59	13:01	6166	28242								ss reg = 6713298	4350958 = ss resid	
4401518	59	3	f	SC31	30500	8/6/03 16:58	8/7/03 6:01	13:03	4438	19650										
Std.	53	3	Std Rep	SC14	30500	8/7/03 3:31	8/7/03 3:31	0:00	6536	30152	6642	150	2.3%							
Std.	54	3	Std Rep	SC14	30500	8/7/03 3:43	8/7/03 3:43	0:00	6736	31201										
Std.	55	3	Std Rep	SC14	30500	8/7/03 3:49	8/7/03 3:49	0:00	6848	31783										
Std.	56	3	Std Rep	SC14	30500	8/7/03 4:00	8/7/03 4:00	0:00	6612	30549										
Std.	60	3	Std Rep	SC14	30500	8/7/03 6:03	8/7/03 6:03	0:00	6481	29867										
4401519	70	4	a	SC05	10400	8/6/03 11:11	8/7/03 8:15	21:04	1828	9075	1897	71	3.7%	87%				m = -437.21	2147.65 = b	
4401520	71	4	b	SC05	10400	8/6/03 11:11	8/7/03 8:18	21:07	1892	9439								se _m = 150.885	83.5799 = se _b	
4401521	72	4	c	SC05	10400	8/6/03 11:11	8/7/03 8:24	21:13	1970	9885								r ² = 0.51208	189.575 = se _Y	
4402519	75	4	a	SC05	10400	8/7/03 0:59	8/7/03 15:33	14:34	1477	7118	1590	160	10%	73%	81%	87%	80%	F = 8.39614	8 = df	
4402521	77	4	c	SC05	10400	8/7/03 0:59	8/7/03 15:38	14:39	1703	8387								ss reg = 301747	287510 = ss resid	
Std.	78	4	Std Rep	SC05	10400	8/7/03 15:44	8/7/03 15:44	0:00	2143	10907										
Std.	79	4	Std Rep	SC05	10400	8/7/03 15:47	8/7/03 15:47	0:00	2186	11152	2184	72	3.3%							
Std.	80	4	Std Rep	SC05	10400	8/7/03 15:49	8/7/03 15:49	0:00	2085	10575										
Std.	73	4	Std Rep	SC03	10400	8/7/03 8:53	8/7/03 8:53	0:00	2250	9528										
Std.	74	4	Std Rep	SC03	10400	8/7/03 9:24	8/7/03 9:24	0:00	2254	9546										
4402520	76	4	b	SC05	10400	8/7/03 0:59	LOST													
4401522						TC440.1 Used for 2nd set.														
4401523						TC440.2 Used for 2nd set.														
4401524						TC440.2 Used for 2nd set.														

Table 4

Table 4 - TC440.1 and TC440.2 (after Interval 3) Quality Control and Sample Recovery of Methyl Bromide Gas Samples

Project #: TC440.1 and TC440.2

Comparison of Methyl Bromide Gas Concentrations in the Tarp Soil Inter-space: Deep Broadcast Tarped vs. Shallow Broadcast Tarped Fumigation

Minimum ETA for Treatment Samples: 3:10

Average ETA for Treatment Samples: 6:44

Maximum ETA for Treatment Samples: 13:40

Syringe Sample Volume (ml): 15 mL

1.063511562

Sample No.			Sort Code	Interval	Sample Rep	Std Cyl. No.	Std. Concentration (ppmv)	Time of		Elapsed Time from Collection to Analysis (ETA)	Peak Area	Back Calculated Conc. (ppmv)	Average Peak Area for ETA	Peak Area for ETA Std Dev.	Peak Area for ETA % Std Dev. (CV)	ETA Average % Recovery for Samples	Sampling Interval Average % Recovery for Samples	Regression Estimated Sampling Interval % Recovery for Samples	Regression Estimated 24 Hour % Recovery	Linear Regression Analysis of Sample Recovery			
																				m =	-1446.4	2171.76	= b
																				se _m =	353.362	93.9363	= se _b
																				r ² =	0.62623	230.101	= se _Y
																				F =	16.7546	10	= df
																				ss reg =	887100	529466	= ss resid
</																							

Table 4

Table 4 - TC440.1 and TC440.2 (after Interval 3) Quality Control and Sample Recovery of Methyl Bromide Gas Samples

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4401537	105	7	a	SC06	8600	8/8/03 11:23	8/8/03 18:14	6:51	1204	5687	1424	204	14%	84%		87%	47%	m =	-901.71	1704.91 = b	
4401538	106	7	b	SC06	8600	8/8/03 11:23	8/8/03 18:16	6:53	1459	7108								se _m =	270.617	52.6642 = se _b	
4401539	107	7	c	SC06	8600	8/8/03 11:23	8/8/03 18:27	7:04	1608	7972								r ² =	0.58121	107.475 = se _Y	
4401540	108	7	d	SC06	8600	8/8/03 13:38	8/8/03 18:32	4:54	1564	7711								F =	11.1027	8 = df	
4401541	109	7	e	SC06	8600	8/8/03 13:38	8/8/03 18:34	4:56	1545	7604								ss reg =	128246	92406.8 = ss resid	
4401542	110	7	f	SC06	8600	8/8/03 13:38	8/8/03 18:37	4:59	1524	7478	1544	20	1.3%	91%	87%						
Std.	111	7	Std Rep	SC06	8600	8/8/03 18:18	8/8/03 18:18	0:00	1689	8448											
Std.	112	7	Std Rep	SC06	8600	8/8/03 18:44	8/8/03 18:44	0:00	1671	8343											
Std.	113	7	Std Rep	SC06	8600	8/8/03 18:46	8/8/03 18:46	0:00	1722	8649											
Std.	114	7	Std Rep	SC06	8600	8/8/03 18:47	8/8/03 18:47	0:00	1722	8647	1701	25	1.5%								
4401543	115	8	a	SC06	8600	8/9/03 11:23	8/9/03 16:40	5:17	1444	6966	1508	90	6.0%	89%		91%	51%	m =	-838.01	1703.35 = b	
4401544	116	8	b	SC06	8600	8/9/03 11:23	8/9/03 16:41	5:18	1470	7108								se _m =	192.02	28.5013 = se _b	
4401545	117	8	c	SC06	8600	8/9/03 11:23	8/9/03 16:43	5:20	1611	7906								r ² =	0.73124	52.3591 = se _Y	
4401546	118	8	d	SC06	8600	8/9/03 13:39	8/9/03 16:45	3:06	1620	7955								F =	19.0458	7 = df	
4401547	119	8	e	SC06	8600	8/9/03 13:39	8/9/03 16:46	3:07	1614	7923								ss reg =	52213.6	19190.3 = ss resid	
4401548	120	8	f	SC06	8600	8/9/03 13:39	8/9/03 16:48	3:09	1594	7810	1609	13	0.8%	95%	92%						
Std.	121	8	Std Rep	SC06	8600	8/9/03 16:52	8/9/03 16:52	0:00	1701	8423											
Std.	122	8	Std Rep	SC06	8600	8/9/03 16:54	8/9/03 16:54	0:00	1670	8244											
Std.	123	8	Std Rep	SC06	8600	8/9/03 16:56	8/9/03 16:56	0:00	1721	8538	1697	26	1.5%								
4401549	124	9	a	SC06	8600	8/10/03 11:23	8/10/03 15:35	4:12	1526	7421	1582	58	3.6%	92%		94%	59%	m =	-708.1	1722.57 = b	
4401550	125	9	b	SC06	8600	8/10/03 11:23	8/10/03 15:39	4:16	1641	8075								se _m =	126.195	14.0832 = se _b	
4401551	126	9	c	SC06	8600	8/10/03 11:23	8/10/03 15:42	4:19	1580	7730								r ² =	0.75895	34.8174 = se _Y	
4401552	130	9	d	SC06	8600	8/10/03 13:38	8/10/03 16:50	3:12	1663	8203								F =	31.4853	10 = df	
4401553	131	9	e	SC06	8600	8/10/03 13:38	8/10/03 16:52	3:14	1652	8140								ss reg =	38168.1	12122.5 = ss resid	
4401554	132	9	f	SC06	8600	8/10/03 13:38	8/10/03 16:53	3:15	1622	7970	1646	21	1.3%	96%	94%						
Std.	127	9	Std Rep	SC06	8600	8/10/03 15:59	8/10/03 15:59	0:00	1747	8691											
Std.	128	9	Std Rep	SC06	8600	8/10/03 16:02	8/10/03 16:02	0:00	1728	8578											
Std.	129	9	Std Rep	SC06	8600	8/10/03 16:05	8/10/03 16:05	0:00	1699	8410											
Std.	133	9	Std Rep	SC06	8600	8/10/03 16:55	8/10/03 16:55	0:00	1687	8341											
Std.	134	9	Std Rep	SC06	8600	8/10/03 16:57	8/10/03 16:57	0:00	1739	8642											
Std.	135	9	Std Rep	SC06	8600	8/10/03 16:58	8/10/03 16:58	0:00	1724	8558	1720	23	1.4%								

Table 4

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4401555	136	10	a	SC06	8600	8/11/03 6:56	8/11/03 12:09	5:13	1452	7002								m =	-946.14	1750.96	= b
4401556	137	10	b	SC06	8600	8/11/03 6:56	8/11/03 12:11	5:15	1435	6908								se _m =	166.924	25.3862	= se _b
4401557	138	10	c	SC06	8600	8/11/03 6:56	8/11/03 12:12	5:16	1586	7754	1491	83	5.6%	85%				r ² =	0.76262	62.1942	= se _Y
4401558	142	10	d	SC06	8600	8/11/03 8:17	8/11/03 13:19	5:02	1663	8193								F =	32.1273	10	= df
4401559	143	10	e	SC06	8600	8/11/03 8:17	8/11/03 13:21	5:04	1594	7794						88%	46%	ss reg =	124272	38681.2	= ss resid
4401560	144	10	f	SC06	8600	8/11/03 8:17	8/11/03 13:22	5:05	1560	7605	1606	53	3.3%	92%	88%						
Std.	139	10	Std Rep	SC06	8600	8/11/03 12:15	8/11/03 12:15	0:00	1729	8574											
Std.	140	10	Std Rep	SC06	8600	8/11/03 12:16	8/11/03 12:16	0:00	1722	8528											
Std.	141	10	Std Rep	SC06	8600	8/11/03 12:18	8/11/03 12:18	0:00	1750	8690											
Std.	145	10	Std Rep	SC06	8600	8/11/03 13:24	8/11/03 13:24	0:00	1774	8829											
Std.	146	10	Std Rep	SC06	8600	8/11/03 13:25	8/11/03 13:25	0:00	1761	8756											
Std.	147	10	Std Rep	SC06	8600	8/11/03 13:26	8/11/03 13:26	0:00	1765	8780	1750	21	1.2%								

Table 5 - TC440.2 Quality Control and Sample Recovery of Methyl Bromide Gas Samples - First 3 intervals

Project #: TC440.2

Comparison of Methyl Bromide Gas Concentrations in the Tarp Soil Inter-space: Deep Broadcast Tarped vs. Shallow Broadcast Tarped Fumigation

Minimum ETA for Treatment Samples: 3:00

Average ETA for Treatment Samples: 8:48

Syringe Sample Volume (ml): 15 mL

Maximum ETA for Treatment Samples: 18:56

Sample No.	Sort Code	Interval	Sample Rep	Std Cyl. No.	Std. Concentration (ppmv)	Time of Date-Time of Collection	Date-Time of Analysis	Elapsed Time from Collection to Analysis	Peak Area	Back Calculated Conc. (ppmv)	Average Peak Area for ETA	Peak Area for ETA Std Dev.	Peak Area for ETA % Std Dev. (CV)	ETA Average % Recovery for Samples	Sampling Interval Average % Recovery for Samples	Regression Estimated Sampling Interval % Recovery for Samples	Regression Estimated 24 Hour % Recovery	Linear Regression Analysis of Sample Recovery				
4402501	25	1	a	SC31	30500	8/6/03 10:00	8/6/03 21:03	11:03	5197	23448	5298	247	4.7%	81%					m =	-1990.71	6525.0558	= b
4402502	26	1	b	SC31	30500	8/6/03 10:00	8/6/03 21:05	11:05	5118	23059									se _m =	328.48895	108.115461	= se _b
4402503	27	1	c	SC31	30500	8/6/03 10:00	8/6/03 21:07	11:07	5579	25336									r ² =	0.7695185	286.295383	= se _Y
4402504	31	1	d	SC31	30500	8/6/03 11:20	8/6/03 23:26	12:06	5912	26997									F =	36.726164	11	= df
4402505	32	1	e	SC31	30500	8/6/03 11:20	8/6/03 23:28	12:08	5964	27261									ss reg =	3010261.8	901615.51	= ss resid
4402506	33	1	f	SC31	30500	8/6/03 11:20	8/6/03 23:30	12:10	5521	25049	5799	242	4.2%	89%	85%							
Std.	28	1	Std Rep	SC14	30500	8/6/03 19:28	8/6/03 19:28	0:00	6318	28475												
Std.	29	1	Std Rep	SC14	30500	8/6/03 20:48	8/6/03 20:48	0:00	6431	28990												
Std.	30	1	Std Rep	SC14	30500	8/6/03 21:10	8/6/03 21:10	0:00	6598	30477												
Std.	34	1	Std Rep	SC14	30500	8/6/03 23:23	8/6/03 23:23	0:00	6429	29618												
Std.	35	1	Std Rep	SC14	30500	8/6/03 23:39	8/6/03 23:39	0:00	6560	30286												
Std.	36	1	Std Rep	SC14	30500	8/7/03 0:13	8/7/03 0:13	0:00	6647	30609	6536	154	2.4%									
Std.	37	1	Std Rep	SC14	30500	8/7/03 0:16	8/7/03 0:16	0:00	6771	31304												
4402507	38	2	a	SC31	30500	8/6/03 11:45	8/7/03 0:31	12:46	5083	22797	5012	139	2.8%	75%					m =	-2896.96	6704.6029	= b
4402508	39	2	b	SC31	30500	8/6/03 11:45	8/7/03 0:33	12:48	5102	22889									se _m =	458.85775	188.374002	= se _b
4402509	40	2	c	SC31	30500	8/6/03 11:45	8/7/03 0:38	12:53	4852	21660									r ² =	0.7994349	462.77876	= se _Y
4402510	44	2	d	SC31	30500	8/6/03 12:40	8/7/03 3:35	14:55	4445	19680									F =	39.859116	10	= df
4402511	45	2	e	SC31	30500	8/6/03 12:40	8/7/03 3:37	14:57	4466	19782									ss reg =	8536394.8	2141641.81	= ss resid
4402512	46	2	f	SC31	30500	8/6/03 12:40	8/7/03 3:39	14:59	6154	28185	5022	981	20%	75%	75%							
Std.	41	2	Std Rep	SC14	30500	8/7/03 0:13	8/7/03 0:13	0:00	6647	30609												
Std.	42	2	Std Rep	SC14	30500	8/7/03 0:16	8/7/03 0:16	0:00	6771	31304												
Std.	43	2	Std Rep	SC14	30500	8/7/03 0:40	8/7/03 0:40	0:00	6754	31295												
Std.	47	2	Std Rep	SC14	30500	8/7/03 3:31	8/7/03 3:31	0:00	6536	30152												
Std.	48	2	Std Rep	SC14	30500	8/7/03 3:43	8/7/03 3:43	0:00	6736	31201												
Std.	49	2	Std Rep	SC14	30500	8/7/03 3:49	8/7/03 3:49	0:00	6848	31783	6715	109	1.6%									
4402513	61	3	a	SC31	30500	8/6/03 18:50	8/7/03 14:10	19:20	4253	22984	5098	758	15%	76%					m =	-1574.58	6719.748	= b
4402514	62	3	b	SC31	30500	8/6/03 18:50	8/7/03 14:12	19:22	5323	29110									se _m =	468.85077	306.256425	= se _b
4402515	63	3	c	SC31	30500	8/6/03 18:50	8/7/03 14:14	19:24	5717	31365									r ² =	0.6170426	530.497567	= se _Y
4402516	64	3	d	SC31	30500	8/6/03 19:17	8/7/03 14:16	18:59	5653	31001									F =	11.278798	7	= df
4402517	65	3	e	SC31	30500	8/6/03 19:17	8/7/03 14:17	19:00	5977	32852									ss reg =	3174165.7	1969993.68	= ss resid
4402518	66	3	f	SC31	30500	8/6/03 19:17	8/7/03 14:21	19:04	5853	32145	5828	163	2.8%	87%	81%							
Std.	67	3	Std Rep	SC31	30500	8/7/03 14:25	8/7/03 14:25	0:00	6794	37532	6714	73	0									
Std.	68	3	Std Rep	SC31	30500	8/7/03 14:28	8/7/03 14:28	0:00	6697	36974												
Std.	69	3	Std Rep	SC31	30500	8/7/03 14:32	8/7/03 14:32	0:00	6652	36716												

Table 5 - TC440.2 Quality Control and Sample Recovery of Methyl Bromide Gas Samples - First 3 intervals

Project #: TC440.2

Comparison of Methyl Bromide Gas Concentrations in the Tarp Soil Inter-space: Deep Broadcast Tarp vs. Shallow Broadcast Tarp Fumigation*Minimum ETA for Treatment Samples: 3:00**Average ETA for Treatment Samples: 8:48*

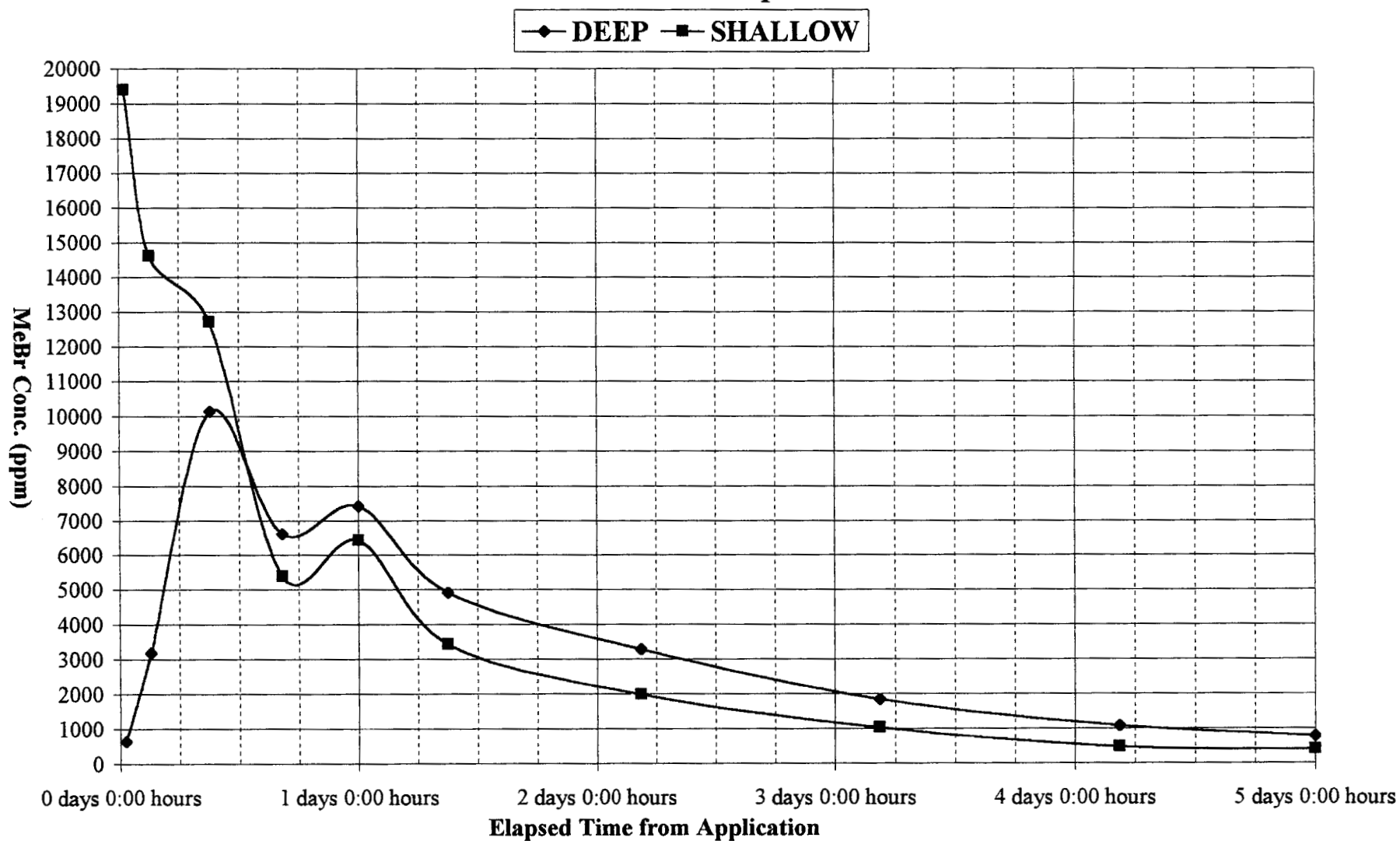
Syringe Sample Volume (ml): 15 mL

Maximum ETA for Treatment Samples: 18:56

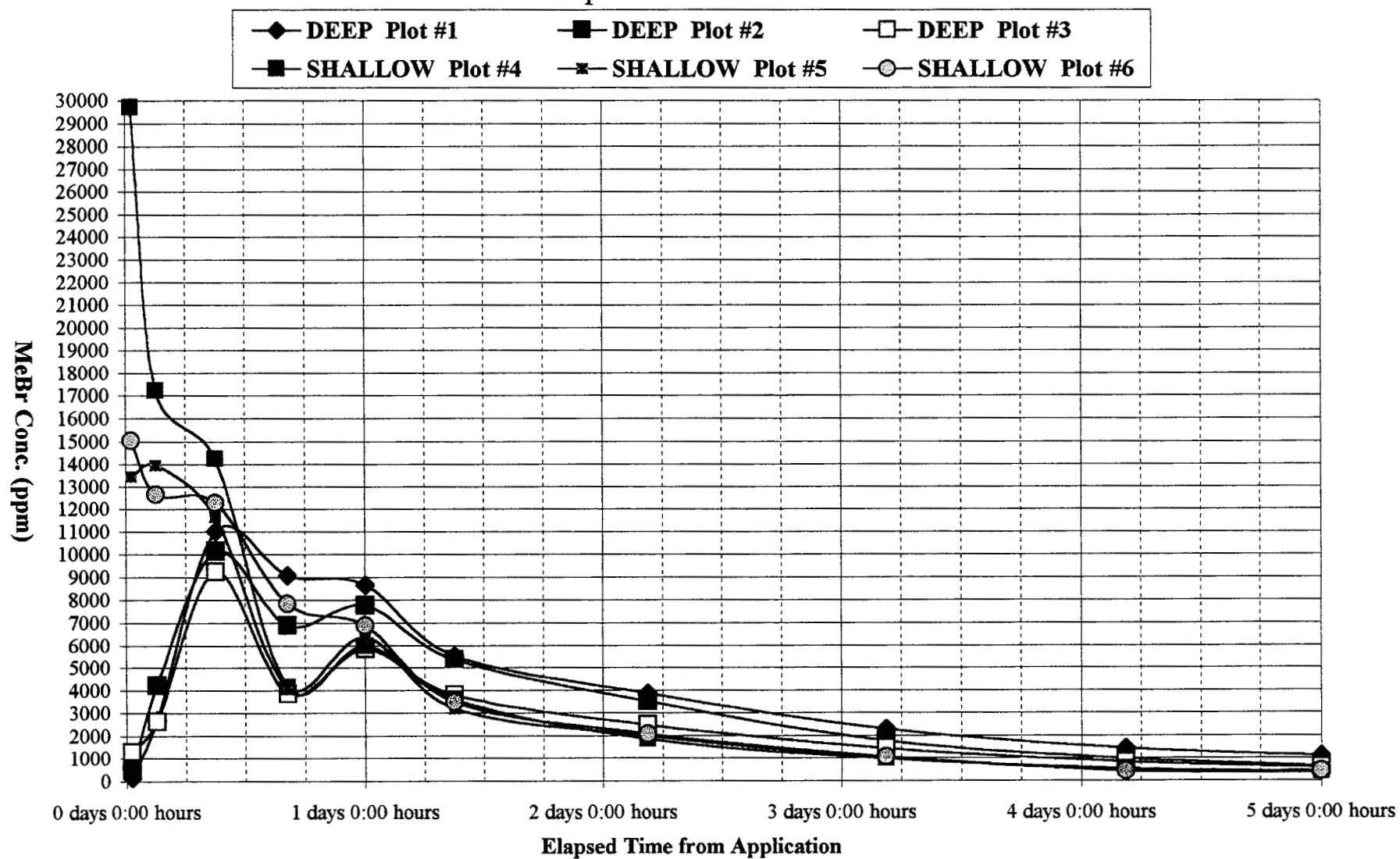
Sample No.	Sort Code	Interval	Sample Rep	Std Cyl. No.	Std. Concentration (ppmv)	Date-Time of Collection	Date-Time of Analysis	Elapsed Time from Collection to Analysis	Peak Area	Back Calculated Conc. (ppmv)	Average Peak Area for ETA	Peak Area for ETA Std Dev.	Peak Area for ETA % Std Dev. (CV)	ETA Average % Recovery for Samples	Sampling Interval Average % Recovery for Samples	Regression Estimated Sampling Interval % Recovery for Samples	Regression Estimated 24 Hour % Recovery	Linear Regression Analysis of Sample Recovery
4402519	75	4	a	SC05	10400	8/7/03 0:59	8/7/03 15:33	14:34	1477	7118								
4402520	76	4	b	SC05	10400	8/7/03 0:59	LOST											
4402521	77	4	c	SC05	10400	8/7/03 0:59	8/7/03 15:38	14:39	1703	8387								
Std.	78	4	Std Rep	SC05	10400	8/7/03 15:44	8/7/03 15:44	0:00	2143	10907								
Std.	79	4	Std Rep	SC05	10400	8/7/03 15:47	8/7/03 15:47	0:00	2186	11152								
Std.	80	4	Std Rep	SC05	10400	8/7/03 15:49	8/7/03 15:49	0:00	2085	10575								

Data for Interval 4 combined with TC440.1 Recovery Analysis. Subsequent Sampling Intervals used same set of recovery samples.

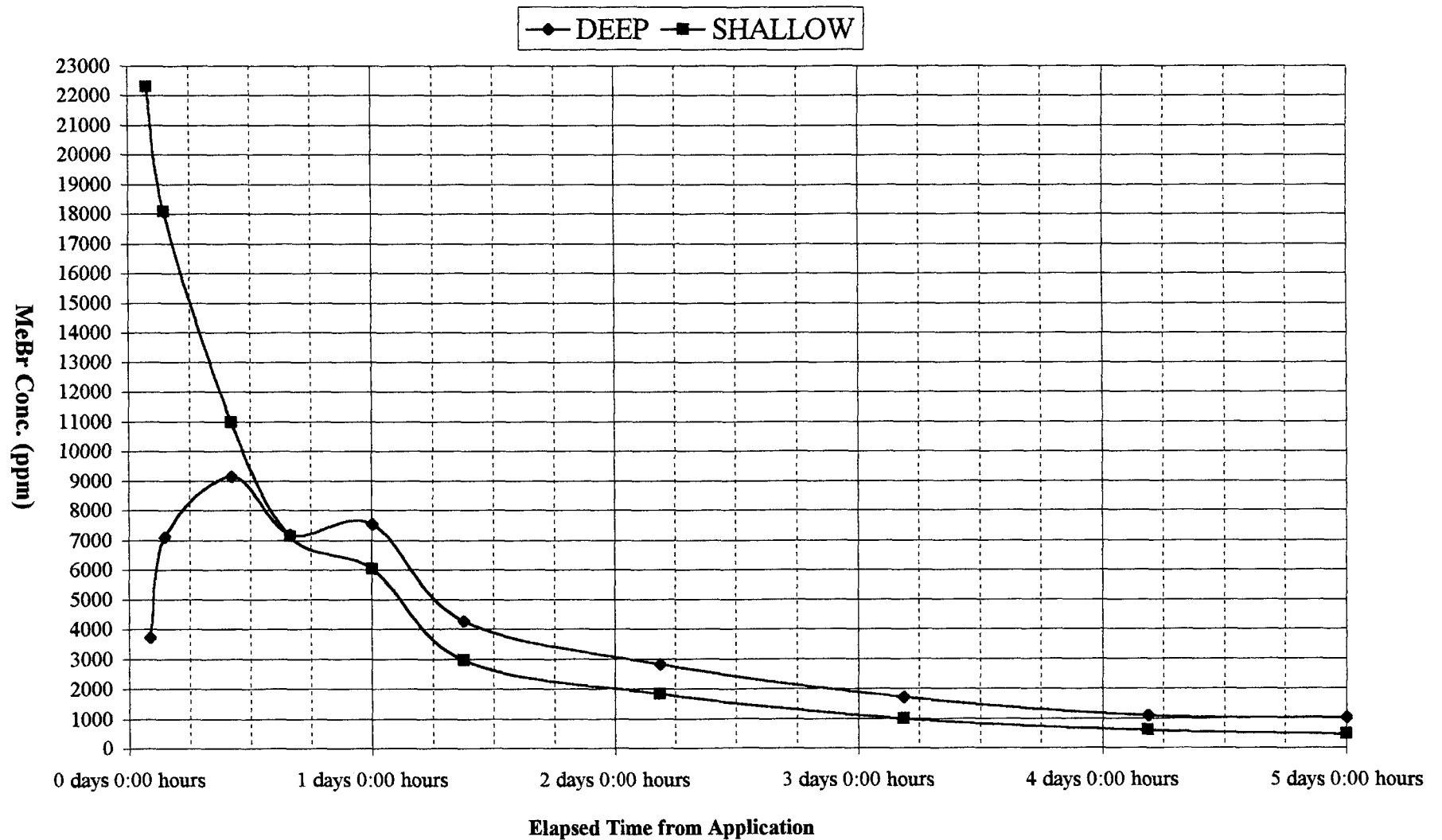
Graph 1 - MeBr Soil-Tarp Interspace Gas Conc. vs. Time
TC440.1 Broadcast Deep vs. Shallow



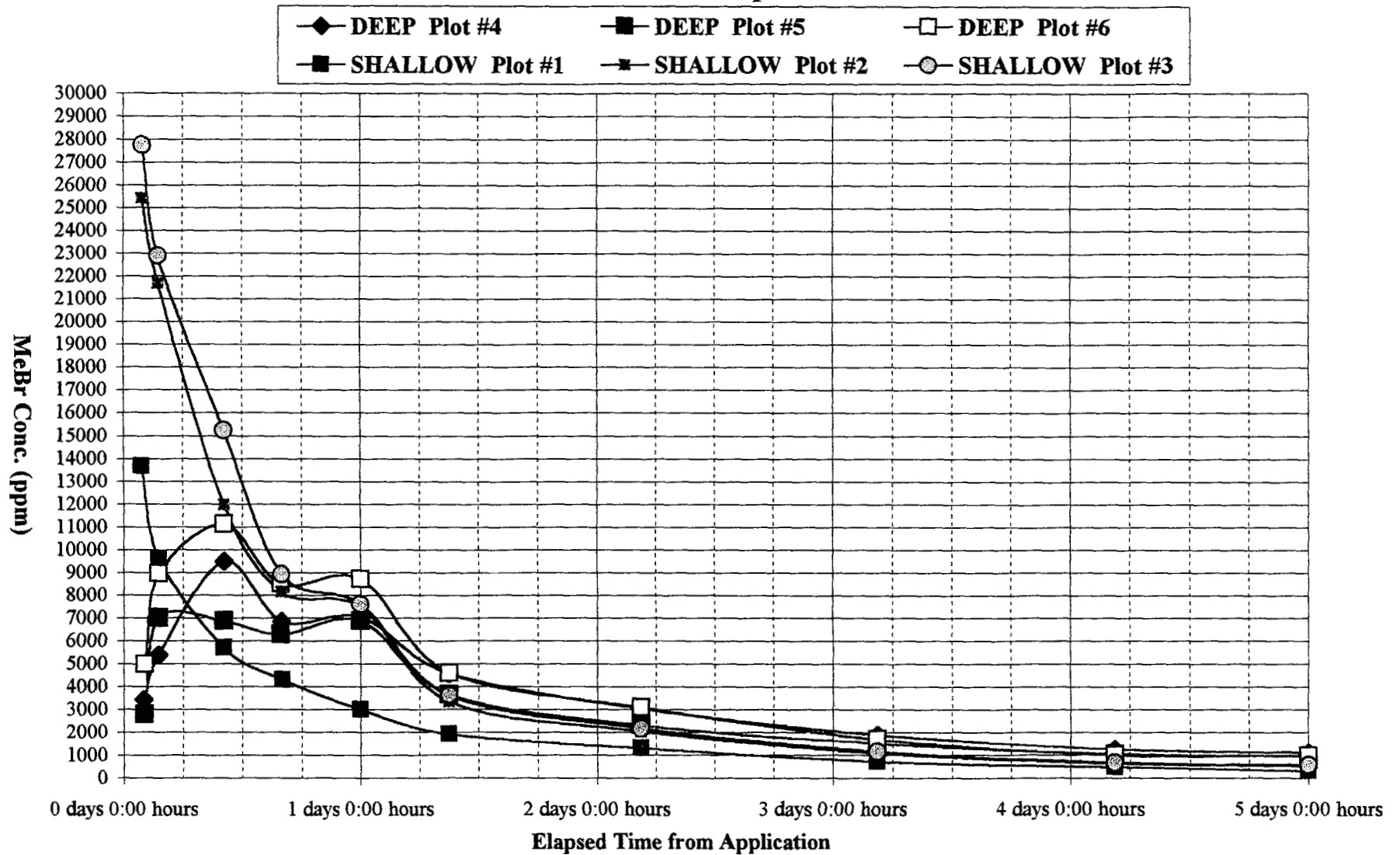
Graph 2 - MeBr Soil-Tarp Interspace Gas Conc. vs. Time
TC440.1 Broadcast Deep vs. Shallow - PLOT MEAN TRENDS



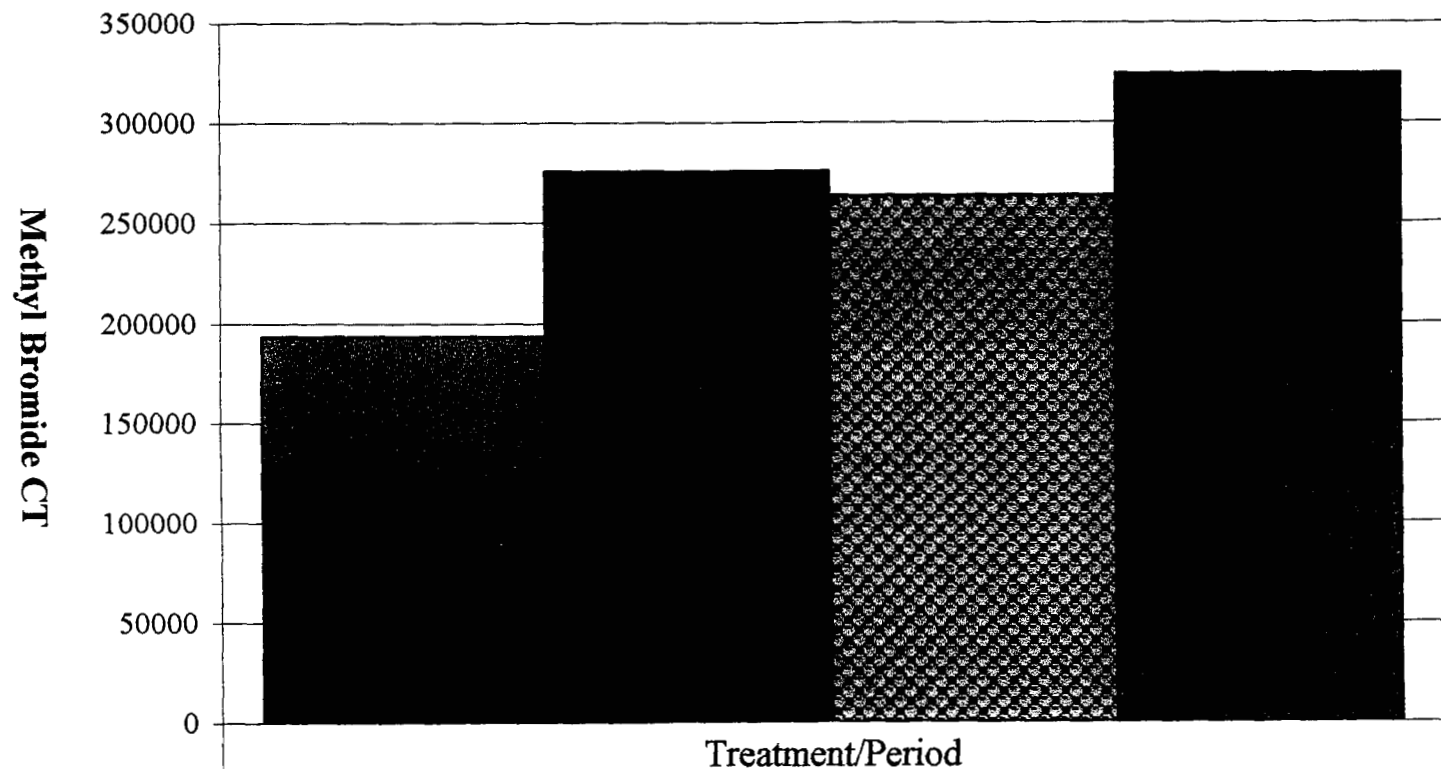
Graph 3 - MeBr Soil-Tarp Interspace Gas Conc. vs. Time
TC440.2 Broadcast Deep vs. Shallow



Graph 4 - Soil-Tarp Interspace Gas Conc. vs. Time
TC440.2 Broadcast Deep vs. Shallow



Graph 5 - Accumulated Methyl Bromide CT Within the Tarp-Soil Interspace - TC440.1

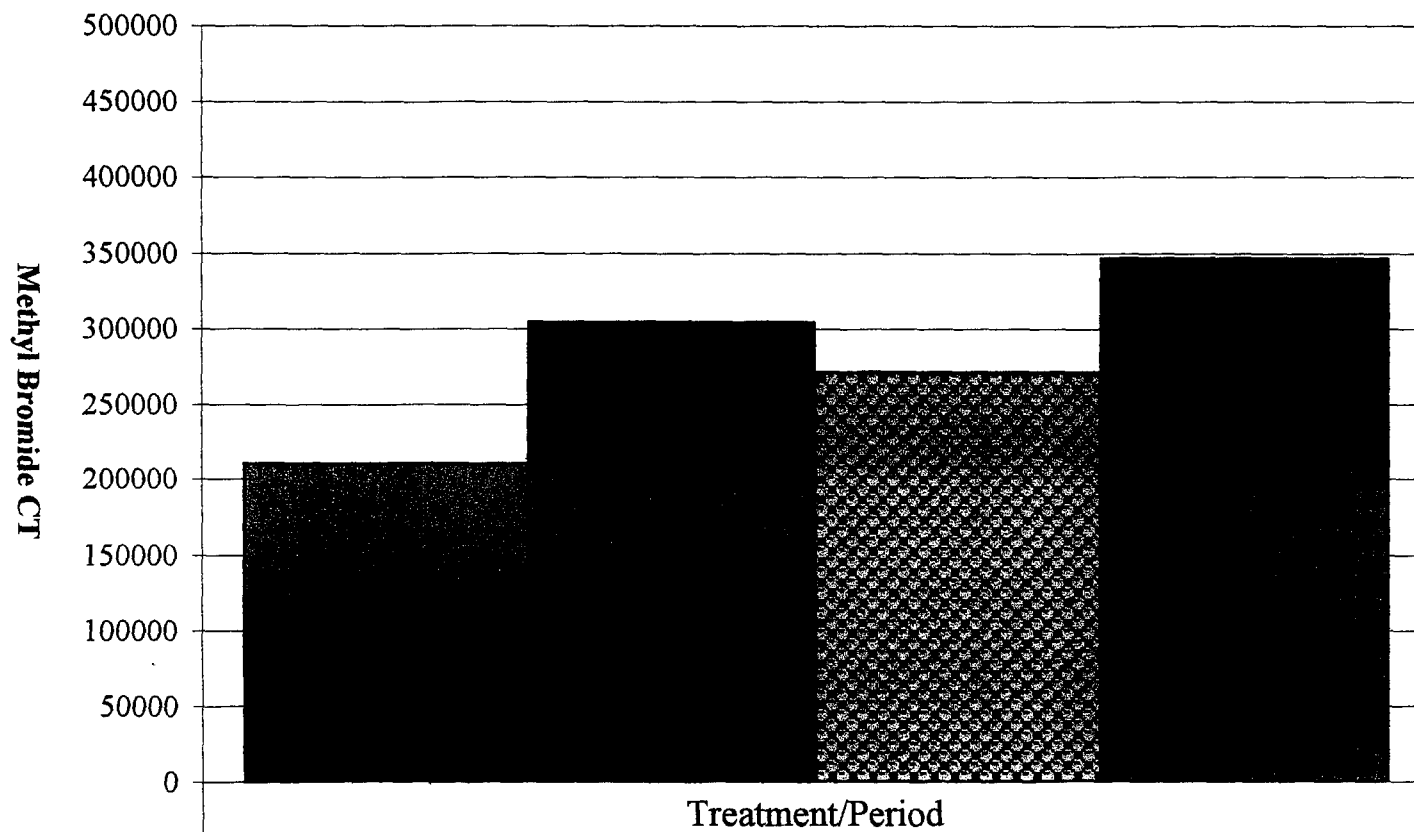


■ DEEP 24 hour CT	193036
■ SHALLOW 24 hour CT	275196
▨ DEEP 33 hour CT	262827
■ SHALLOW 33 hour CT	323933

Table 26 - TC440.1 Summary of Methyl Bromide CT
Comparison of Methyl Bromide Gas Concentrations in the Tarp
Soil Inter-space: Deep Broadcast Tarped vs. Shallow Broadcast
Tarped Fumigation

Interval	Treatment	Treatment Interval Average Date-Time	Treatment Interval Average Elapsed Time from Application (hrs.)	Treatment Interval Average CT	Accumulative Treatment CT
1	DEEP	8/6/03 7:39	0:32	1170	1170
1	SHALLOW	8/6/03 8:11	0:32	35016	35016
2	DEEP	8/6/03 10:14	3:06	13544	14714
2	SHALLOW	8/6/03 10:43	3:04	62096	97112
3	DEEP	8/6/03 16:09	9:02	66704	81418
3	SHALLOW	8/6/03 16:41	9:02	84054	181166
4	DEEP	8/6/03 23:24	16:17	49510	130928
4	SHALLOW	8/6/03 23:56	16:17	40295	221461
5	DEEP	8/7/03 7:09	24:01	62107	193036
5	SHALLOW	8/7/03 7:40	24:01	53734	275196
6	DEEP	8/7/03 16:09	33:01		
6	SHALLOW	8/7/03 16:40	33:01		
7	DEEP	8/8/03 11:36	52:28	71284	334111
7	SHALLOW	8/8/03 12:07	52:28	43077	367010
8	DEEP	8/9/03 11:36	76:28	44188	378299
8	SHALLOW	8/9/03 12:07	76:28	24838	391848
9	DEEP	8/10/03 11:36	100:28	23645	401944
9	SHALLOW	8/10/03 12:07	100:28	10160	402008
10	DEEP	8/11/03 7:09	120:01	7693	
10	SHALLOW	8/11/03 7:40	120:01	3896	

Graph 6 - Accumulated Methyl Bromide CT Within the Tarp-Soil Interspace - TC440.2



■ DEEP 24 hour CT	210291
■ SHALLOW 24 hour CT	304175
▣ DEEP 33 hour CT	271104
■ SHALLOW 33 hour CT	346211

Table 27 - TC440.2 Summary of Methyl Bromide CT
Comparison of Methyl Bromide Gas Concentrations in the Tarp Soil
Inter-space: Deep Broadcast Tarped vs. Shallow Broadcast Tarped
Fumigation

Interval	Treatment	Treatment Interval Average Date-Time	Treatment Interval Average Elapsed Time from Application (hrs.)	MeBr CT	
				Treatment Interval Average CT	Accumulative Treatment CT
1	DEEP	8/6/03 11:01	2:04	10409	10409
1	SHALLOW	8/6/03 10:21	1:52	60194	60194
2	DEEP	8/6/03 12:28	3:31	28700	39109
2	SHALLOW	8/6/03 12:01	3:32	74795	134989
3	DEEP	8/6/03 19:05	10:08	56626	95735
3	SHALLOW	8/6/03 18:37	10:08	68316	203305
4	DEEP	8/7/03 0:50	15:53	50018	145753
4	SHALLOW	8/7/03 0:27	15:58	49454	252759
5	DEEP	8/7/03 8:58	24:01	64538	210291
5	SHALLOW	8/7/03 8:30	24:01	51415	304175
6	DEEP	8/7/03 17:58	33:01	60813	271104
6	SHALLOW	8/7/03 17:30	33:01	42036	346211
7	DEEP	8/8/03 13:25	52:28	61187	332292
7	SHALLOW	8/8/03 12:57	52:28	39862	386073
8	DEEP	8/9/03 13:25	76:28	40897	373189
8	SHALLOW	8/9/03 12:57	76:28	23684	409757
9	DEEP	8/10/03 13:25	100:28	23938	397127
9	SHALLOW	8/10/03 12:57	100:28	12891	422648
10	DEEP	8/11/03 8:58	120:01	9955	407082
10	SHALLOW	8/11/03 8:30	120:01	4550	427198

TC440-1 ANOVA Tables

Table 6

Interval 1

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
DEEP	12	7699.2803	641.60669	929677.79
SHALLOW	12	232813.49	19401.124	77835926

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	2.112E+09	1	2.112E+09	53.615203	2.48456E-07	7.9453457
Within Groups	866421647	22	39382802			
Total	2.978E+09	23				

Table 7

Interval 2

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
DEEP	12	38240.931	3186.7443	1924112.2
SHALLOW	12	175386.48	14615.54	12100812

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	783704198	1	783704198	111.75877	4.34933E-10	7.9453457
Within Groups	154274171	22	7012462.3			
Total	937978369	23				

Table 8

Interval 3

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
DEEP	12	121562.01	10130.168	3653132.8
SHALLOW	12	152712.74	12726.062	3257055.7

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	40432003	1	40432003	11.702142	0.002446491	7.9453457
Within Groups	76012074	22	3455094.3			
Total	116444077	23				

TC440-1 ANOVA Tables

Table 9

Interval 4

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
DEEP	12	79260.56	6605.0466	6145752.7
SHALLOW	12	64508.227	5375.6856	3370986.6

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	9067971.2	1	9067971.2	1.9056887	0.181309142	4.3009436
Within Groups	104684133	22	4758369.7			
Total	113752104	23				

Table 10

Interval 5

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
DEEP	12	89034.102	7419.5085	3940777.3
SHALLOW	11	71074.303	6461.3003	2456844.6

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	5269456.9	1	5269456.9	1.6293211	0.215733161	4.3247894
Within Groups	67916996	21	3234142.7			
Total	73186453	22				

Table 11

Interval 6

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
DEEP	12	58875.16	4906.263	1416326
SHALLOW	12	41114	3426.167	126647.5

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	13144112	1	13144112	17.03738	0.000441761	7.945346
Within Groups	16972706	22	771486.6			
Total	30116818	23				

TC440-1 ANOVA Tables

Table 12

Interval 7

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
DEEP	12	39374.18	3281.182	789313
SHALLOW	12	23794.12	1982.843	145434.6

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	10114101	1	10114101	21.64028	0.000122776	7.945346
Within Groups	10282223	22	467373.8			
Total	20396324	23				

Table 13

Interval 8

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
DEEP	12	22093.94	1841.162	296248.1
SHALLOW	12	12418.96	1034.914	35879.7

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	3900216	1	3900216	23.48624	7.64976E-05	7.945346
Within Groups	3653406	22	166063.9			
Total	7553622	23				

Table 14

Interval 9

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
DEEP	12	13030.51	1085.876	140005.7
SHALLOW	12	5599.014	466.5845	119587.9

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	2301130	1	2301130	17.72872	0.000360782	7.945346
Within Groups	2855529	22	129796.8			
Total	5156660	23				

TC440-1 ANOVA Tables

Table 15

Interval 10

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
DEEP	12	9444.664	787.0553	141315.3
SHALLOW	12	4782.639	398.5532	16485.66

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	905603.2	1	905603.2	11.47779	0.002646689	7.945346
Within Groups	1735810	22	78900.47			
Total	2641414	23				

TC440-2 ANOVA Tables

Table 16

Interval 1

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
SHALLOW	12	267528.01	22294	55957043
DEEP	12	44699.022	3724.9185	2953350.6

ANOVA

<i>Source of Variatio</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	2.069E+09	1	2.069E+09	70.237686	2.705E-08	7.9453457
Within Groups	648014324	22	29455197			
Total	2.717E+09	23				

Table 17

Interval 2

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	12	216929.33	18077.444	60017265
Column 2	12	85300.284	7108.357	7551561.7

ANOVA

<i>Source of Variatio</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	721925232	1	721925232	21.368589	0.0001319	7.9453457
Within Groups	743257089	22	33784413			
Total	1.465E+09	23				

Table 18

Interval 3

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	12	131810.4	10984.2	22397461
Column 2	12	109869.49	9155.7908	5042432.7

ANOVA

<i>Source of Variatio</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	20058482	1	20058482	1.4619942	0.2394477	4.3009436
Within Groups	301838831	22	13719947			
Total	321897313	23				

TC440-2 ANOVA Tables

Table 19

Interval 4

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	12	85491.372	7124.281	9019537.5
Column 2	12	86465.887	7205.4906	2080095.9

ANOVA

<i>Source of Variatio</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	39569.992	1	39569.992	0.00713	0.933471	4.3009436
Within Groups	122095967	22	5549816.7			
Total	122135537	23				

Table 20

Interval 5

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	12	72361.911	6030.1593	9810198.5
Column 2	12	90403.823	7533.6519	5330923.1

ANOVA

<i>Source of Variatio</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	13562940	1	13562940	1.7915371	0.1944083	4.3009436
Within Groups	166552338	22	7570560.8			
Total	180115278	23				

Table 21

Interval 6

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	12	35461.277	2955.1064	1064299.1
Column 2	12	51300.894	4275.0745	422993.54

ANOVA

<i>Source of Variatio</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	10453895	1	10453895	14.057616	0.0011093	7.9453457
Within Groups	16360219	22	743646.34			
Total	26814114	23				

TC440-2 ANOVA Tables

Table 22

Interval 7

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	12	22017.886	1834.8238	315710.45
Column 2	12	33797.264	2816.4386	344571.75

ANOVA

<i>Source of Variatio</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	5781405.8	1	5781405.8	17.511924	0.0003843	7.9453457
Within Groups	7263104.2	22	330141.1			
Total	13044510	23				

Table 23

Interval 8

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	12	11842.142	986.84514	77867.386
Column 2	12	20448.602	1704.0502	75271.019

ANOVA

<i>Source of Variatio</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	3086298.6	1	3086298.6	40.30731	2.176E-06	7.9453457
Within Groups	1684522.5	22	76569.202			
Total	4770821	23				

Table 24

Interval 9

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	12	7104.1946	592.01622	22789.39
Column 2	12	13191.982	1099.3319	55621.43

ANOVA

<i>Source of Variatio</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1544215	1	1544215	39.387804	2.572E-06	7.9453457
Within Groups	862519.02	22	39205.41			
Total	2406734	23				

TC440-2 ANOVA Tables

Table 25

Interval 10

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	12	5585.3493	465.44578	21211.623
Column 2	12	12221.254	1018.4378	8552.905

ANOVA

<i>ource of Variatio</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1834801.1	1	1834801.1	123.28777	1.739E-10	7.9453457
Within Groups	327409.81	22	14882.264			
Total	2162210.9	23				

TC440: ANALYTICAL PROCEDURES

Summary:

Two types of samples were analyzed during this test; soil and gas. Soil sampling and analysis was done in accordance with Bolsa Research Associates SOP # BR-AP-004; "Determination of Soil % Moisture, Bulk Density, and Texture". Gas samples were taken from the tarp / soil interface in accordance with a slight modification of Bolsa Research Associates SOP # BR-FD-003; "Soil Gas Sampling Methods". The gas samples were then analyzed on a Buck Model 910 Gas Chromatograph in accordance with GC analytical procedures detailed in Bolsa Research Associates SOP # BR-AP-001, "Film Permeability Testing"; sections 6, 9, 10, 11.1, 11.3, and 11.5.

Soil Procedures:

Soil samples were taken at selected depths using aluminum Soil Core Sample Cylinders. These cylinders are all of a known volume. For determining Bulk Density and Moisture Content; the soil samples were weighed on a top loading laboratory balance, dried in a forced air drying oven at approximately 80° C, then cooled to room temperature and reweighed. Soil texture was determined by the Bouyoucos Hydrometer Method. This procedure is based upon the different settling rates of various types of soils when slurried and diluted in water. Temperatures and hydrometer reading of the soil / water mixtures were taken at specified times and applied to various calculations and charts to determine the various soil textures present in the samples.

Gas Procedures:

Gas samples were taken from small diameter tubing inserted under the tarps at various locations. Septa were attached to the end of the tubes and the insertion holes were taped over so as to limit the escape of any gas from under the tarps. Gas tight, 20 cc glass syringes with 1 inch stainless steel needles were used to withdraw the samples out of the tubes. To prevent any leakage out of the needles after collection, the needles were inserted into rubber stoppers before putting the syringes into storage containers for transport to the field lab for analysis. The syringes were then analyzed by Gas Chromatography.

Gas Chromatography Procedure:

Preliminary:

The first, and most critical step, in Gas Chromatography (GC) analysis is determining and obtaining / preparing / validating the standards to be used. The standards used for this study were prepared in accordance with the following Bolsa Research Associates Sop's: BR-LP-012; "Preparation of Methyl Bromide Standards by Pressure" and BR-LP-013; "Preparation of Methyl Bromide Standards by Syringe Dilution". The standards prepared according to BR-LP-012 were tested extensively against other standards and against each other to validate their concentration before certifying for use in this test. Standards prepared according to BR-LP-013 were prepared in the field as needed from the "certified / validated" standards prepared according to BR-LP-012. Due to this linkage, all the standards used for the GC analysis of the gas samples taken during this study were appropriately validated.

Instrumentation:

The instrument used for analysis of the gas sample was a Buck Scientific Model 910 GC, Manufactured by SRI Instruments. It is configured / equipped as follows: 1) A Valco 10 port gas valve with a 1.0 ml. gas sampling loop, configured to operate in the "6 port mode". 2) A HP-5 megabore GC column; 30 meters long, 0.53 millimeters inner diameter, and film thickness of 1.5 micrometers. 3) A SRI designed Flame Ionization Detector (FID). This instrument is operated via a computer using a software program called "Peak Simple Chromatography Data System", designed by SRI instruments and installed into both, the GC

and the computer. The computer used was a Toshiba Satellite Pro Notebook Computer, with Windows® 95 and Microsoft® Office 97.

Calibration:

Prior to commencing the field part of this study, two calibration curves were generated and saved in the Peak Simple computer programs Control Files. The curves covered concentration ranges from 104 PPM to 51500 PPM. Initial calibration was performed the first day of the study, before any sample analysis. During the analytical part of the study, calibration standards were checked regularly to monitor that the GC was still performing within an acceptable variability range of the initial calibration parameters. At a minimum, the calibration curve was checked and printed out at the beginning of each analytical run on the GC.

Sample Analysis:

Sample analysis was commenced as soon as practically possible after delivery of the samples to the field lab. Samples consisted of approximately 10 – 15 ml. of gas in gas – tight, glass syringes. Approximately ½ of the volume of sample (or at least 5 ml.) in each syringe was injected into the inlet to the Gas Sampling loop on the GC. Once activated by the computer, column injection and analysis of each sample was performed automatically by the GC software program. If a sample result was below the range of the Calibration curve, a lower concentration standard was prepared by dilution of one of the certified standards and injected in order to bracket the sample and verify its concentration. If a sample result went above the range of the calibration curve, the sample was diluted appropriately to bring it into the calibration range and rerun. If there was no response from a sample, the concentration was considered to be non-detectable.

Quality Control:

To maintain and monitor the quality of the analytical portion of this study, the following procedures were followed: 1) For each sampling interval, six “storage stability” samples were prepared. This was done by taking a certified standard into the field with the samplers and filling the designated sample syringes from the standard and storing them with the field samples during the sampling, storage, and transporting to the lab. These “storage stability” samples were treated just like the field samples and analyzed at the same time they were. For comparison, a standard equal in concentration to that used to prepare the “storage stability” samples was run alongside them during the GC analytical run. 2) For monitoring the accuracy and precision of the GC program, a calibration standard within the range of the expected sample results and the current calibration curve was run periodically during each GC run, preferably after each 10 sample injections. The above Q.C. steps were performed in addition to the steps discussed earlier in the Calibration section.

Data Handling:

The data generated during the above discussed procedures was handled as follows: 1) A file folder entitled TC 440 was set up for storage of all data and related GC parameters, etc.. Daily each PeakSimple Control File and Calibration File was manually saved into this file folder. 2) An Excel® Workbook was set up for the transfer and saving of all analytical data. At the end of each GC analysis, the result was copied from the PeakSimple Results file onto an Excel® Spreadsheet within the prepared workbook. This was done for all standards and samples. This workbook was saved after each addition into the TC440 file folder. 2) The PeakSimple Control files were programmed to automatically save each resultant chromatogram into a subfolder inside the TC440 file folder. 3) At the very beginning, a “Notebook Log” was set up within the PeakSimple program, to which the program would automatically store all the information relating to each GC analytical run. At the end of the study, when all the analysis was completed, this “Notebook Log” was copied over onto an Excel® Spreadsheet in the workbook saved in the TC440 File Folder. 4) When the Laptop computer containing the project data was returned to the Bolsa Research Facilities at the end of the study, all of the project data was transferred to Bolsa Research’s main desktop computer in order to expedite processing and archiving.

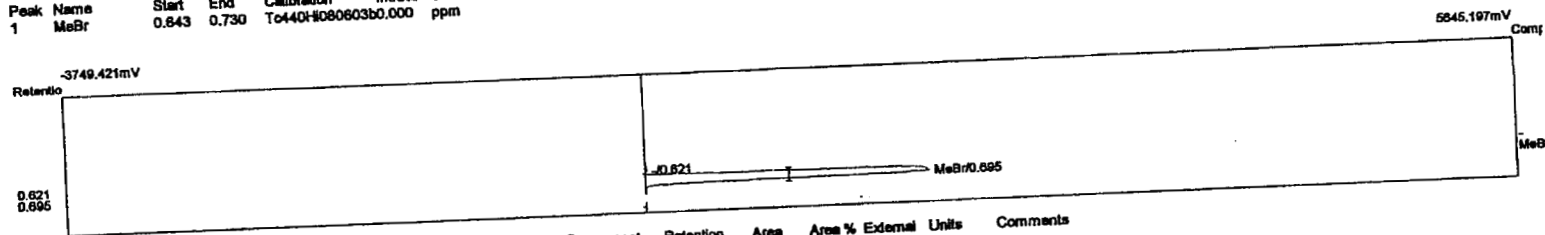
Lab name: Bolsa Research Associates
 Client: TriCal
 Analysis date: 08/06/2003 15:58:37
 Method: Syringe Injection / FID
 Lab ID: BR884
 Description: FID-CHANNEL 2
 Column: Db35
 Carrier: HELIUM AT 25 PSI
 Temp. prog: 440MeBrtemp.tem
 Components: TC440HiMeBr2.cpt
 Data file: TChi440-94.chr (C:\1-Trical\To440\Peaksdat)
 Sample: 4401013
 Operator: George Smith

Temperature program:

Init temp	Hold	Ramp	Final temp
40.00	0.900	0.000	40.00

Components:

Peak	Name	Start	End	Calibration	Int.Std	Units
1	MeBr	0.643	0.730	To440HiMeBr2.cpt	0.000	ppm



Description	Control file	Operator	Data file	Analysis date	Sample	Component	Retention	Area	Area %	External	Units	Comments
FID-CHANNEL 2C:\1-Trical\ToGeorge Smith\TChi440-94.08/06/2003 154401013						MeBr	0.695	5734.882	99.43	25831.11	ppm	
								5734.882	100.00	25831.11		

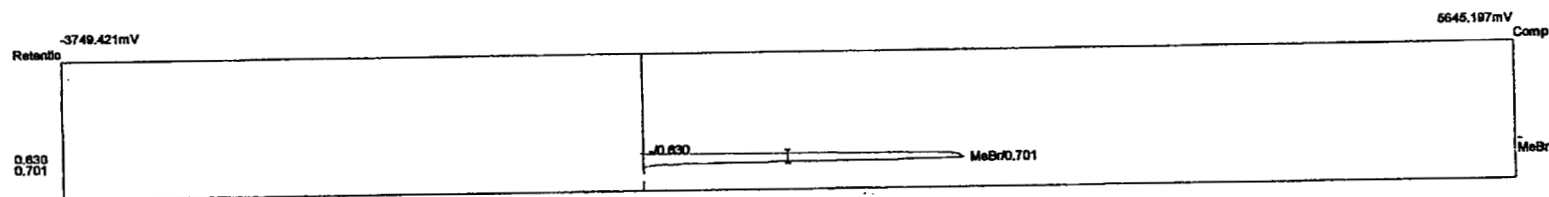
Lab name: Bolsa Research Associates
 Client: TriCal
 Analysis date: 08/06/2003 21:10:14
 Method: Syringe Injection / FID
 Lab ID: BR884
 Description: FID-CHANNEL 2
 Column: Db35
 Carrier: HELIUM AT 25 PSI
 Temp. prog: 440MeBrtemp.tem
 Components: TC440H1MeBr3.cpt
 Data file: TCh440-154.chr (C:\1-Trical\To440\Peaksdat)
 Sample: 30500ppmmebrsc14std
 Operator: George Smith

Temperature program:

Init temp	Hold	Ramp	Final temp
40.00	0.900	0.000	40.00

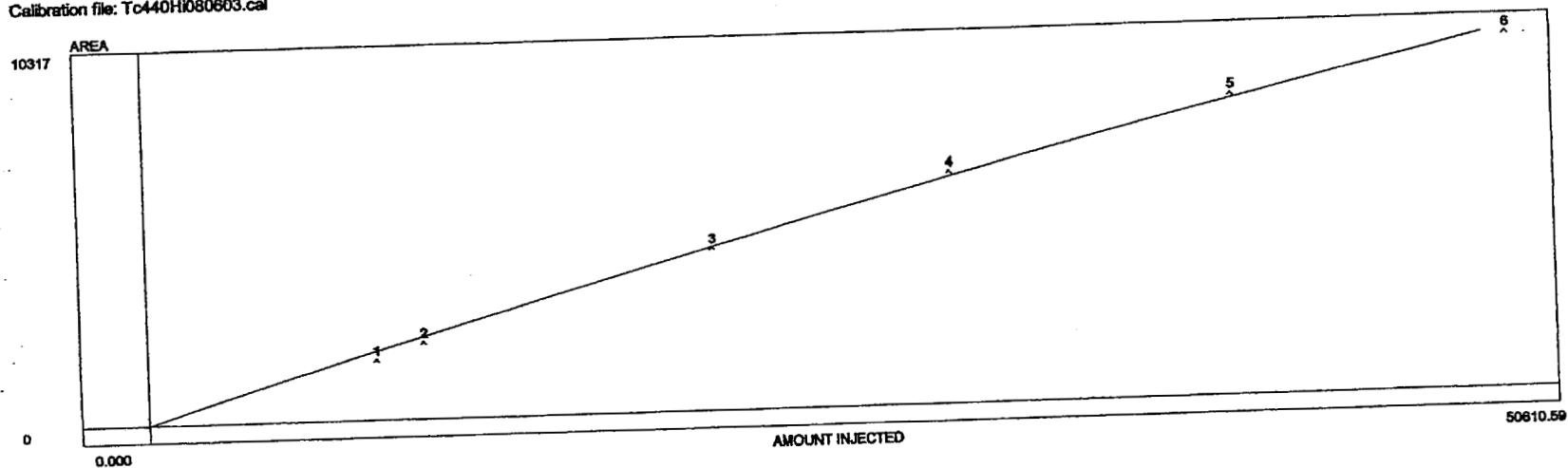
Components:

Peak Name	Start	End	Calibration	Int.Std	Units
1 MeBr	0.643	0.730	To440H10803F0.000	0.000	ppm



Description	Control file	Operator	Data file	Analysis date	Sample	Component	Retention	Area	Area %	External	Units	Comments
FID-CHANNEL 2C:\1-Trical\ToGeorge Smith\TCh440-154		George Smith		08/06/2003 21:30	500ppmmebrsc14std		0.701	6597.884	99.71	30477.28	ppm	
								6597.884	100.00	30477.28		

Calibration file: Tc440HI080603.cal



Avg slope of curve: 0.21

Y-axis intercept: 0.00

Linearity: 0.86

Number of levels: 6

SD/rel SD of CPs: 0.0/4.4

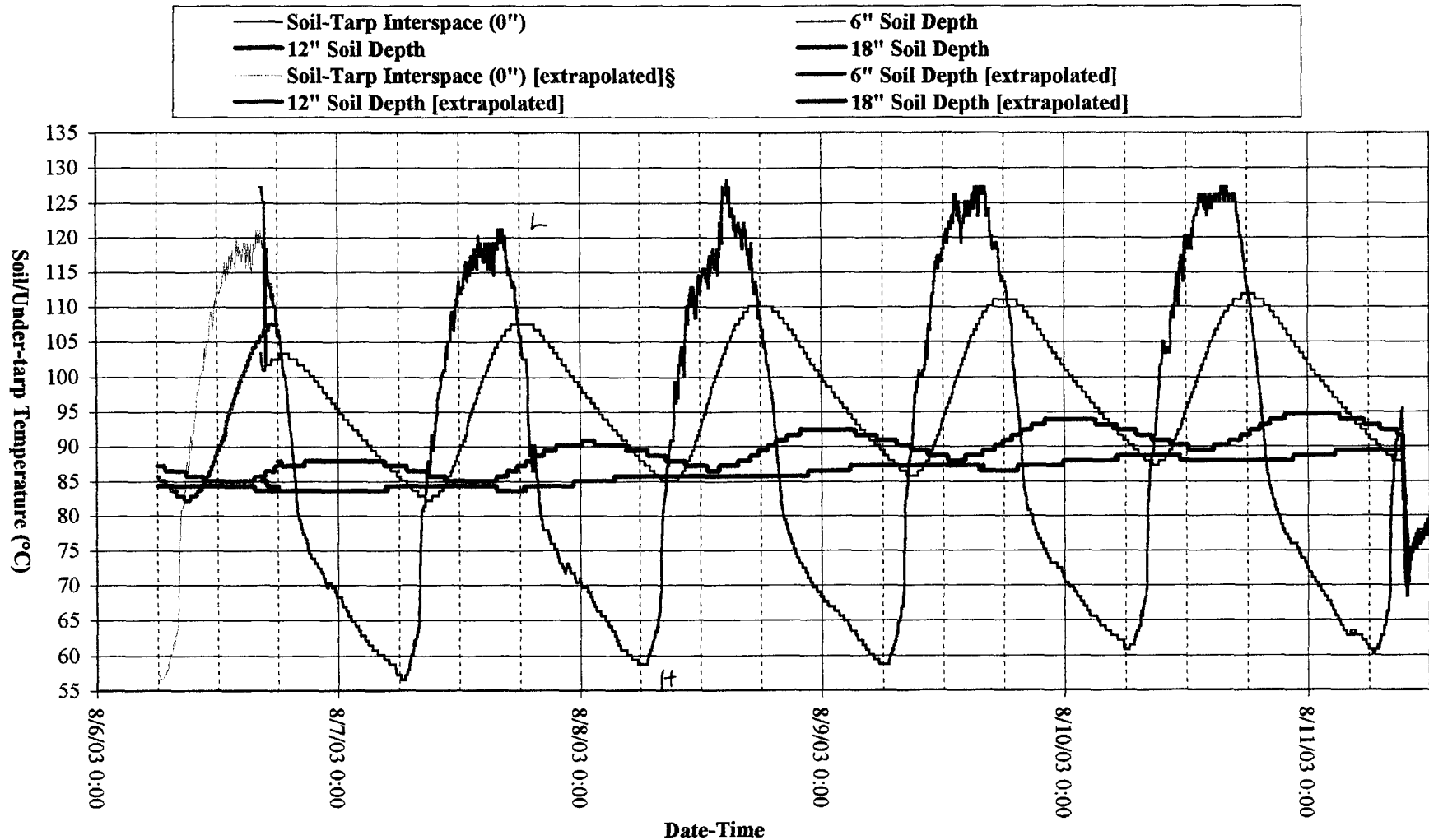
$Y = 0.0000X + 0.2378X$

$r^2: 0.9971$

Last calibrated: Wed Aug 06 12:02:43 2003

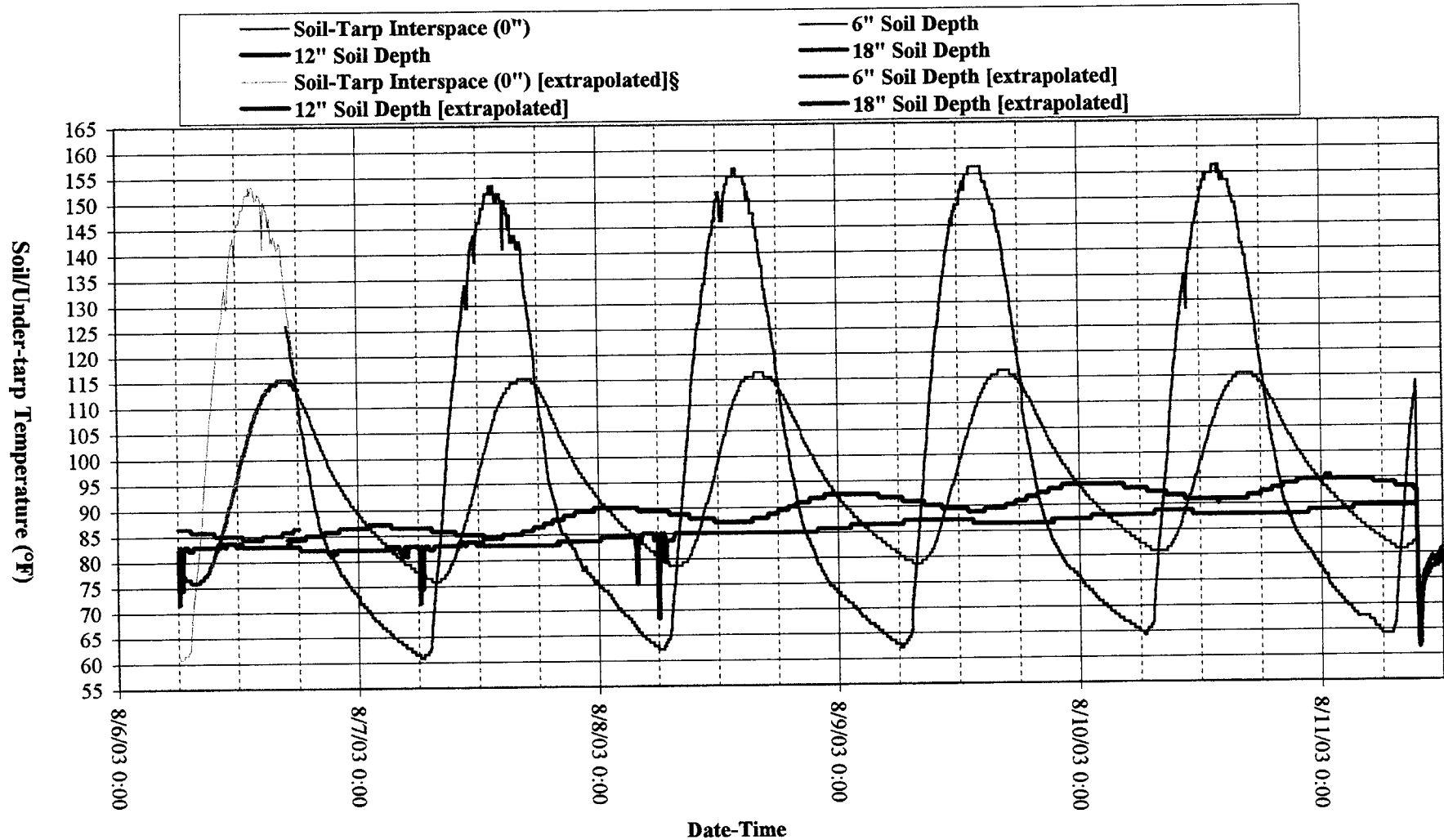
Lvl	Area/hL	Amount	CF	Current	Previous #1	Previous #2
1	1774.891	8600.000	0.208	1774.137	1783.325	1767.511
2	2262.471	10400.000	0.218	2267.593	2270.370	2249.149
3	4757.828	21400.000	0.222	4784.756	4700.089	4788.668
4	6784.366	30600.000	0.222	6763.272	6781.804	6748.221
5	8783.448	41200.000	0.213	8802.827	8820.847	8726.670
6	10316.697	51600.000	0.200	10282.181	10287.997	10369.913

Graph 7 - Soil and Soil-Tarp Interspace Temperatures During TC440.1
Deep Treatment (WX5)



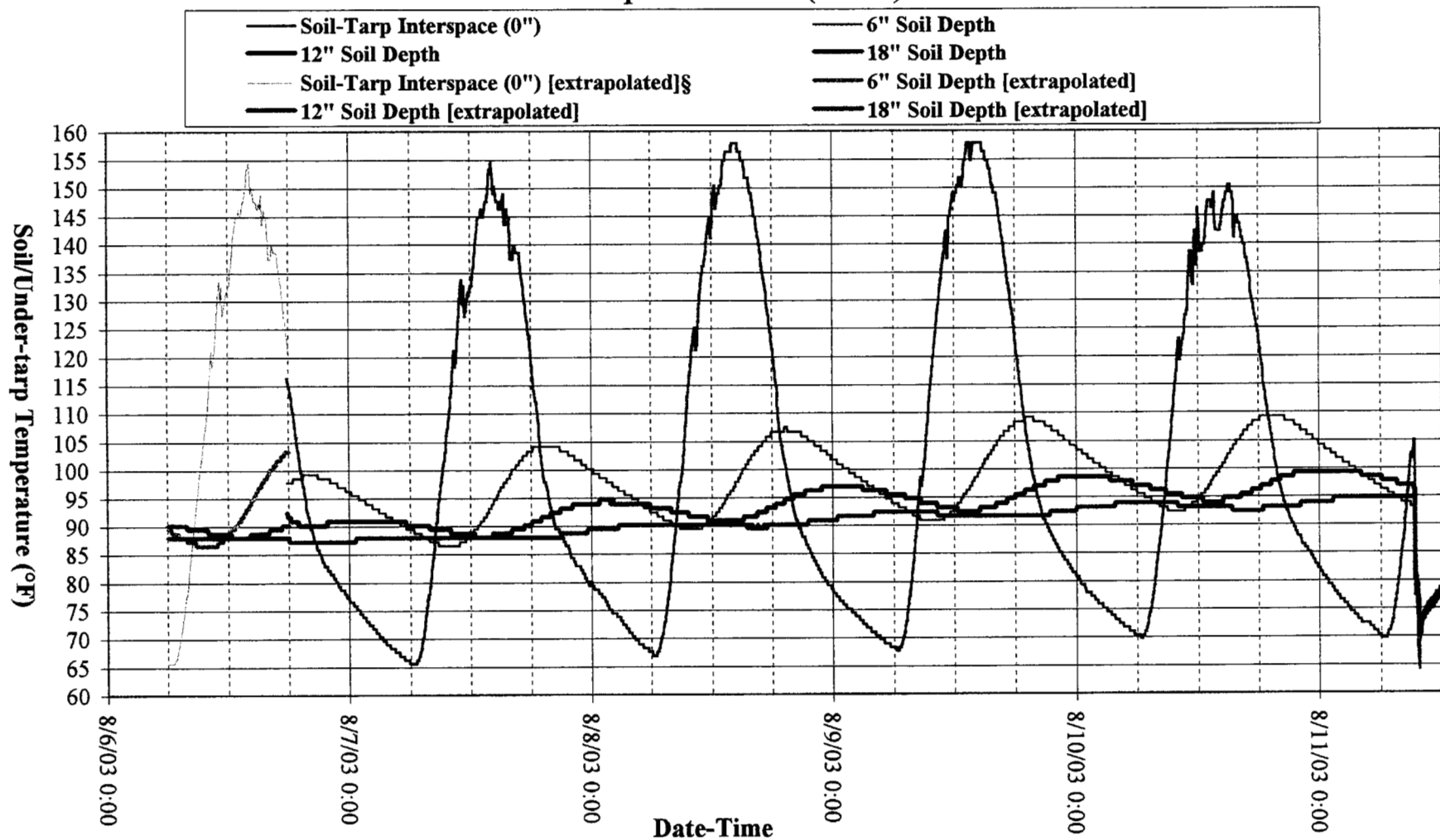
§ Data prior to ~5pm, 8/6/03 is extrapolated from the same time period on 8/7/03. Temperatures on 8/6/03 were slightly cooler with a subsequent warming trend over the course of the study.

Graph 8 - Soil and Soil-Tarp Interspace Temperatures During TC440.1
Shallow Treatment (WX6)



§ Data prior to ~5pm, 8/6/03 is extrapolated from the same time period on 8/7/03.
Temperatures on 8/6/03 were slightly cooler with a subsequent warming trend over the course

Graph 9 - Soil and Soil-Tarp Interspace Temperatures During TC440.2
Deep Treatment (WX7)



§ Data prior to ~5pm, 8/6/03 is extrapolated from the same time period on 8/7/03.

Temperatures on 8/6/03 were slightly cooler with a subsequent warming trend over the course

Table 28 - TC440.1 Soil Moisture and Bulk Density Analysis

Sample Depth	Rep	Soil Moisture %	Bulk Density (g/cm³)	Soil Moisture %			Bulk Density (g/cm³)		
				Average	Std. Dev.	% Std.Dev.	Average	Std. Dev.	% Std.Dev.
0"-6"	rep#1	9.1%	1.50	8.2%	2%	18%	1.52	0.03	2%
0"-6"	rep#2	9.1%	1.50						
0"-6"	rep#3	6.5%	1.56						
6"-12"	rep#1	6.9%	1.35	6.2%	1%	16%	1.35	0.03	2%
6"-12"	rep#2	5.1%	1.32						
6"-12"	rep#3	6.7%	1.38						
12"-18"	rep#1	7.0%	1.42	6.6%	1%	8%	1.34	0.18	14%
12"-18"	rep#2	6.0%	1.47						
12"-18"	rep#3	6.9%	1.43						
18"-24"	rep#1	7.9%	1.50	7.1%	1%	13%	1.55	0.05	3%
18"-24"	rep#2	6.1%	1.55						
18"-24"	rep#3	7.2%	1.59						


 = Probable outlier due to reduced soil volume. BD = 1.44 if outlier removed from bulk density average.

Table 29 - TC440.2 Soil Moisture and Bulk Density Analysis

Sample Depth	Rep	Soil Moisture %	Bulk Density (g/cm³)	Soil Moisture %			Bulk Density (g/cm³)		
				Average	Std. Dev.	% Std.Dev.	Average	Std. Dev.	% Std.Dev.
0"-6"	Rep#1	4.7%	1.67	4.3%	0%	11%	1.71	0.05	3%
0"-6"	Rep#2	4.2%	1.69						
0"-6"	Rep#3	3.8%	1.77						
6"-12"	Rep#1	0.9%	1.64	1.2%	1%	43%	1.67	0.08	5%
6"-12"	Rep#2	1.7%	1.76						
6"-12"	Rep#3	0.9%	1.62						
12"-18"	Rep#1	1.2%	1.46	1.8%	0%	28%	1.64	0.15	9%
12"-18"	Rep#2	2.1%	1.72						
12"-18"	Rep#3	2.0%	1.74						
18"-24"	Rep#1	1.2%	1.45	1.9%	1%	32%	1.62	0.15	9%
18"-24"	Rep#2	2.0%	1.72						
18"-24"	Rep#3	2.4%	1.68						

United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
The Regents of the
University of California,
Agricultural Experiment
Station

Soil Survey of Kings County California

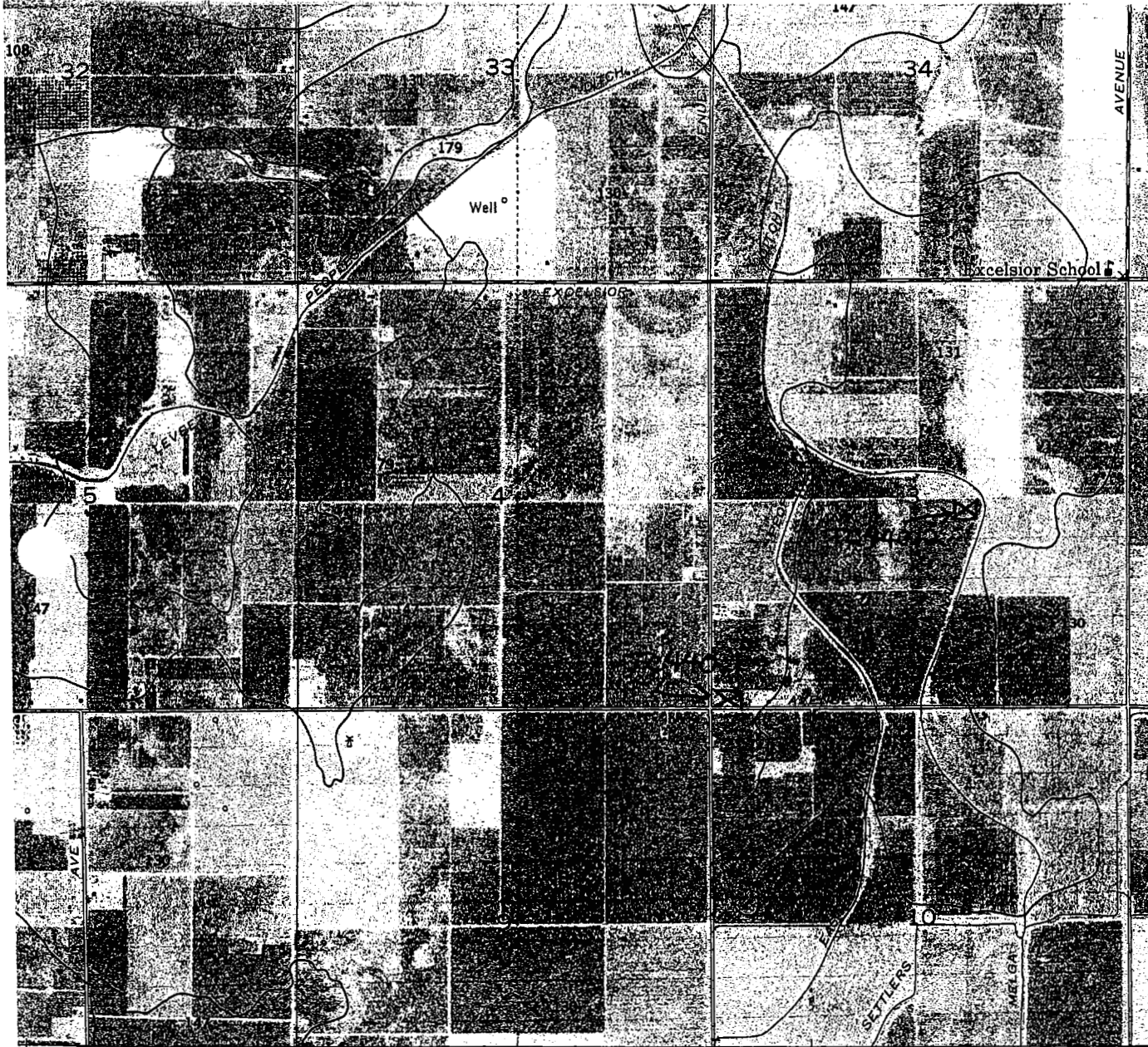


This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in 1979. Soil names and descriptions were approved in 1980. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1980. This survey was made cooperatively by the Soil Conservation Service and the Regents of the University of California, Agricultural Experiment Station. It is part of the technical assistance furnished to the Excelsior, Kings River, and Tulare Lake Resource Conservation Districts.

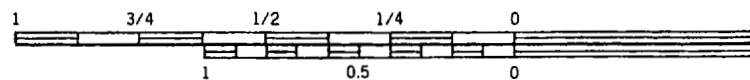
Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Area of Nord soils along the Kings River, in the northern part of the survey area. The area is used mainly for crops including walnuts, apricots, peaches, alfalfa, corn, and cotton and for dairies.



(Joins sh

ed by the U.S. Department of Agriculture,
operating agencies. Base maps are
of Department of the Interior, Geological
r. ography. Coordinate grid ticks and
re approximately positioned.



SCALE

KINGS COUNTY,

derived dominantly from sandstone and shale. The native vegetation is mainly annual grasses, forbs, and shrubs. Elevation is 500 to 2,000 feet. The average annual precipitation is 5 to 7 inches, the average annual air temperature is 64 to 65 degrees F, and the average frost-free period is 230 to 250 days.

This unit is 50 percent Kettleman loam and 40 percent Cantua coarse sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of a Delgado gravelly sandy loam that is on hilltops and has slopes of 15 to 50 percent and small areas of Mercey loam. Also included are small areas of Rock outcrop on ridgetops. Included areas make up about 10 percent of the total acreage.

The Kettleman soil is moderately deep and well drained. It formed in residuum derived from sandstone or shale. Typically, the surface layer is brown loam about 13 inches thick. The underlying material is grayish brown loam about 26 inches thick. It is underlain by grayish brown, calcareous sandstone. The soil is calcareous below a depth of 1 inch.

Permeability of this Kettleman soil is moderate. Available water capacity is low to moderate. Effective rooting depth is 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high.

The Cantua soil is deep and somewhat excessively drained. It formed in residuum derived from sandstone. Typically, the Cantua soil is grayish brown and light brownish gray coarse sandy loam about 55 inches thick. It is underlain by light brownish gray, soft, calcareous sandstone.

Permeability of this Cantua soil is moderately rapid. Available water capacity is low to moderate. Effective rooting depth is 40 to 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland and wildlife habitat.

This unit is suited to use as rangeland. The production of forage is limited by low rainfall, steepness of slope, and the hazard of erosion. Forage production varies with the seasonal precipitation.

Proper grazing use is essential on this unit. Livestock grazing should be managed to protect the unit from erosion. Operating off-road vehicles on the unit can result in deterioration of the native plant community. Adequate plant cover should be left on the unit to reduce erosion and help sustain forage production.

Steepness of slope limits access by livestock and promotes overgrazing of the less sloping areas. Trails or walkways can be constructed to encourage livestock grazing in areas where access is limited. Correct placement of salt and supplemental feed also helps to distribute grazing and prevent overgrazing. Water troughs and tanks are necessary for livestock because of the limited water supply.

The characteristic plant community on this unit is mainly red brome, foxtail fescue, filaree, ripgut brome, and allscale saltbush.

This map unit is in capability subclass VIIe (15), nonirrigated.

130—Kimberlina fine sandy loam, saline-alkali. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from igneous and sedimentary rock. Slope is 0 to 2 percent. Elevation is 220 to 250 feet. The average annual precipitation is 7 to 8 inches, the average annual air temperature is 62 to 63 degrees F, and the average frost-free period is 250 to 260 days.

Typically, the soil is light brownish gray fine sandy loam to a depth of 60 inches or more. It is calcareous below a depth of 8 inches and is saline-alkali throughout. In some areas the surface layer is sandy loam.

Included in this unit are small areas of Cajon sandy loam, Kimberlina fine sandy loam that has a sandy substratum, Nord fine sandy loam that is saline-alkali, and Wasco sandy loam. Also included are small areas of Excelsior sandy loam, Garces loam, Melga silt loam, Remnoy very fine sandy loam, and Youd fine sandy loam and small areas of soils that are subject to rare periods of flooding. Included areas make up about 15 percent of the total acreage.

Permeability of this Kimberlina soil is moderately slow. Available water capacity is very low to low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight.

This unit is used mainly for irrigated crops and for hay and pasture. It is also used for urban development.

This unit is best suited to irrigated crops that are salt- and alkali-tolerant. It is limited mainly by the saline-alkali condition of the soil. Intensive management is required to reduce the salinity of the soil and maintain productivity. Content of the toxic salts can be reduced by leaching, applying proper amounts of soil amendments, and returning crop residue to the soil. Gypsum, sulfur, and sulfuric acid are among the soil amendments that can be used to reclaim the soil. If sulfur or sulfuric acid is used, lime should be present in the surface layer.

Furrow, border, and sprinkler irrigation systems are suited to this unit. The method used generally is governed by the crop grown. Because of the moderately slow permeability of the soil, the application of water should be regulated so that water does not stand on the surface and damage the crops.

A cropping system that includes crop rotation and return of crop residue to the soil or regular addition of other organic matter improves fertility, reduces crusting, and increases the water intake rate. Crops respond to nitrogen and phosphorus.

This unit is suited to hay and pasture. The main limitation is the saline-alkali condition of the soil. The concentration of salts and alkali limits the production of

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some hay and pasture plants. Content of toxic salts can be reduced by leaching, applying proper amounts of soil amendments, and returning crop residue to the soil. Gypsum, sulfur, and sulfuric acid are among the soil amendments that can be used to reclaim the soil. If sulfur or sulfuric acid is used, lime should be present in the surface layer.

Irrigation water can be applied by the sprinkler and border methods. Leveling helps to insure the uniform application of water.

Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition and to protect the soil from erosion. Use of nitrogen and phosphorus promotes good growth of forage plants.

Population growth has resulted in increased construction of homes on this unit. The main limitation for homesite development is the saline-alkali condition of the soil. The risk of erosion is increased if the soil is left exposed during site development. Revegetation of disturbed areas as soon as possible reduces the risk of erosion. The content of toxic salts is reduced by leaching, applying proper amounts of soil amendments, and returning plant residue to the soil. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens. Mulch, fertilizer, and irrigation are needed to establish lawn grasses and other small-seeded plants.

The saline-alkali condition of the soil causes high corrosivity to steel and concrete. Treated steel pipe and sulfate-resistant concrete should be used.

This map unit is in capability unit IIs-6 (17), irrigated, and capability subclass VIIs (17), nonirrigated.

131—Kimberlina fine sandy loam, sandy substratum. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived dominantly from igneous and sedimentary rock. Slope is 0 to 2 percent. Elevation is 250 to 1,000 feet. The average annual precipitation is 7 to 8 inches, the average annual air temperature is 62 to 64 degrees F, and the average frost-free period is 250 to 260 days.

Typically, the surface layer is light brownish gray fine sandy loam about 8 inches thick. The upper 33 inches of the underlying material is light brownish gray and grayish brown fine sandy loam, and the lower part to a depth of 60 inches or more is brown loamy fine sand. This soil is calcareous between depths of 8 and 28 inches and is noncalcareous below a depth of 28 inches. In some areas the surface layer is sandy loam or loam.

Included in this unit are small areas of Cajon sandy loam, Excelsior sandy loam, a Kimberlina fine sandy loam that is saline-alkali, Nord fine sandy loam, and Wasco sandy loam. Also included are small areas of soils that are subject to rare periods of flooding. Included areas make up about 15 percent of the total acreage.

Permeability of this Kimberlina soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more, but roots are mainly in the upper 40 to 60 inches of the soil. Runoff is slow, and the hazard of water erosion is slight.

This unit is used mainly for irrigated crops such as alfalfa, cotton, barley, grapes, and almonds. It is also used for homesite development.

This unit is suited to most irrigated crops. It is limited mainly by the moderate available water capacity and by the sandy substratum, which restricts rooting depth of deep-rooted crops.

Furrow, border, and sprinkler irrigation systems are suited to this unit. Applications of irrigation water should be adjusted to the available water capacity, the water intake rate, and the crop needs to avoid overirrigating and leaching of plant nutrients.

A cropping system that includes crop rotation or cover crops and return of crop residue to the soil conserves moisture, maintains tilth, and controls erosion. Generally, all crops respond to phosphorus and all crops except legumes respond to nitrogen.

If this unit is used for homesite development, it has few limitations; however, the risk of erosion is increased if the soil is left exposed during site development. Revegetation of disturbed areas as soon as possible reduces the risk of erosion. Mulch, fertilizer, and irrigation are needed to establish lawn grasses and other small-seeded plants.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from septic tank absorption fields.

This map unit is in capability unit IIs-4 (17), irrigated, and capability subclass VIIs (17), nonirrigated.

132—Kimberlina, saline-alkali-Garces complex. This map unit is on alluvial fans. Slope is 0 to 2 percent. The vegetation in areas not cultivated is mainly annual grasses and forbs. Elevation is 210 to 250 feet. The average annual precipitation is 7 to 8 inches, the average annual air temperature is 62 to 63 degrees F, and the average frost-free period is 250 to 265 days.

This unit is 50 percent Kimberlina fine sandy loam, saline-alkali, and 35 percent Garces loam. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Cajon sandy loam, a Goldberg loam and a Lakeside clay loam that have been drained, and a Lemoore sandy loam that has been partially drained. Also included are small areas of Nord fine sandy loam, most of which is saline-alkali, and small areas of soils that are subject to rare periods of flooding. Included areas make up about 15 percent of the total acreage.